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# ***Construction Methods*** AND EQUIPMENT

A MCGRAW-HILL PUBLICATION

AUGUST, 1958



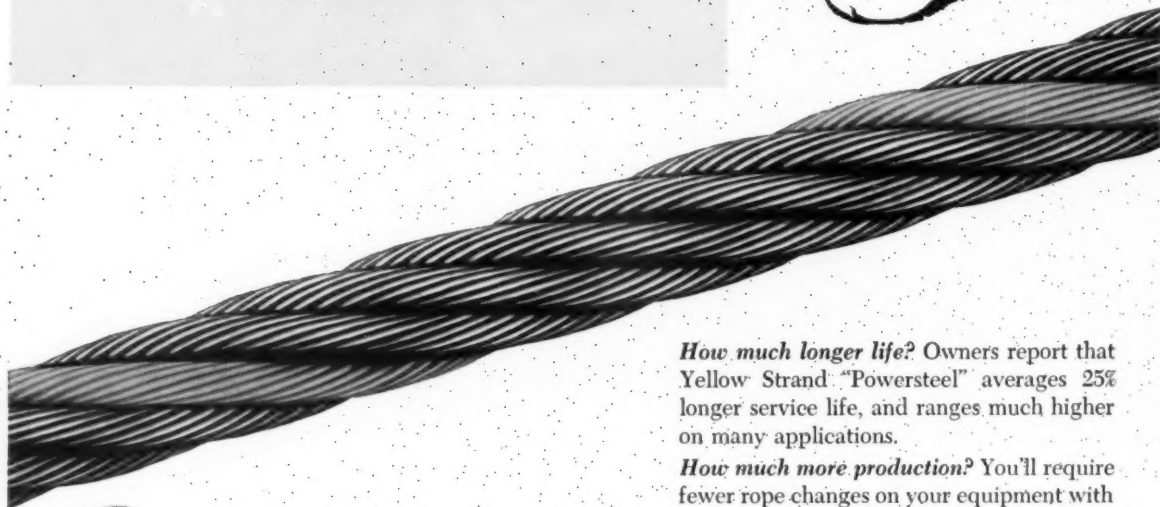
A fleet of 35 scrapers moves a daily average of 75,000 cu yd of sand, clay, and some rock on the 6,400,000-yd job of re-locating 40 mi of U.S. 10 between Jamestown and Valley City, N.D.

CONTENTS PAGE 4

# "POWERSTEEL"

## WIRE ROPE PAYS OFF

**Longer Life  
Higher Production**



### **NEW! YELLOW STRAND WIRE ROPE CLIPS...**

Ask for them at your Yellow Strand Wire Rope Distributor. Heavy-duty galvanized steel U-bolt. Drop-forged steel saddle, hot dip galvanized. Easily applied.



**How much longer life?** Owners report that Yellow Strand "Powersteel" averages 25% longer service life, and ranges much higher on many applications.

**How much more production?** You'll require fewer rope changes on your equipment with "Powersteel," handle bigger loads, operate larger machines. You'll get greater production and more profit... less "downtime" and lower operating costs!

"Powersteel" is an extra high-strength rope for heavy loads and abrasive conditions. It spools freely, resists wear and crushing, and was developed for your high speed, high production equipment.

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**Quality WIRE ROPE since 1876**



**B.F. Goodrich**



## **B.F. Goodrich tires give up to 50% more service, contractor reports**

F. R. HEWETT CO., general contractor of Spokane, Washington, operates 147 pieces of equipment on jobs throughout the Pacific Northwest. Here the job is the Spokane Valley Freeway. "We switched to B. F. Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Truck Supt. Richard M. Ward. "They have given us up to 50% more service than the tires we used previously—and we have been able to retread them too!" Today Hewett uses B. F. Goodrich tires 100%.

Reports like this come in from contractors all over the country. They find B. F. Goodrich off-the-road tires give

them longer, trouble-free service, thanks in part to FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blow-outs and flex breaks. Result: the FLEX-RITE NYLON cord body outwears even extra-thick B. F. Goodrich treads—can be retreaded over and over.

Follow the lead of contractors like Hewett, who reports B. F. Goodrich tires give "very low cost per hour." See your B. F. Goodrich dealer today. He's listed under Tires in the Yellow Pages of your phone book. And ask about the new Rock Service Tubeless or conventional

tire that prevents unnecessary tire failures! B. F. Goodrich Tire Co., A Division of The B. F. Goodrich Co., Akron 18, Ohio.

*Specify B. F. Goodrich Tubeless or tube-type tires when ordering new equipment.*



## **B.F. Goodrich truck tires**

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# Construction Methods AND Equipment

AUGUST, 1958

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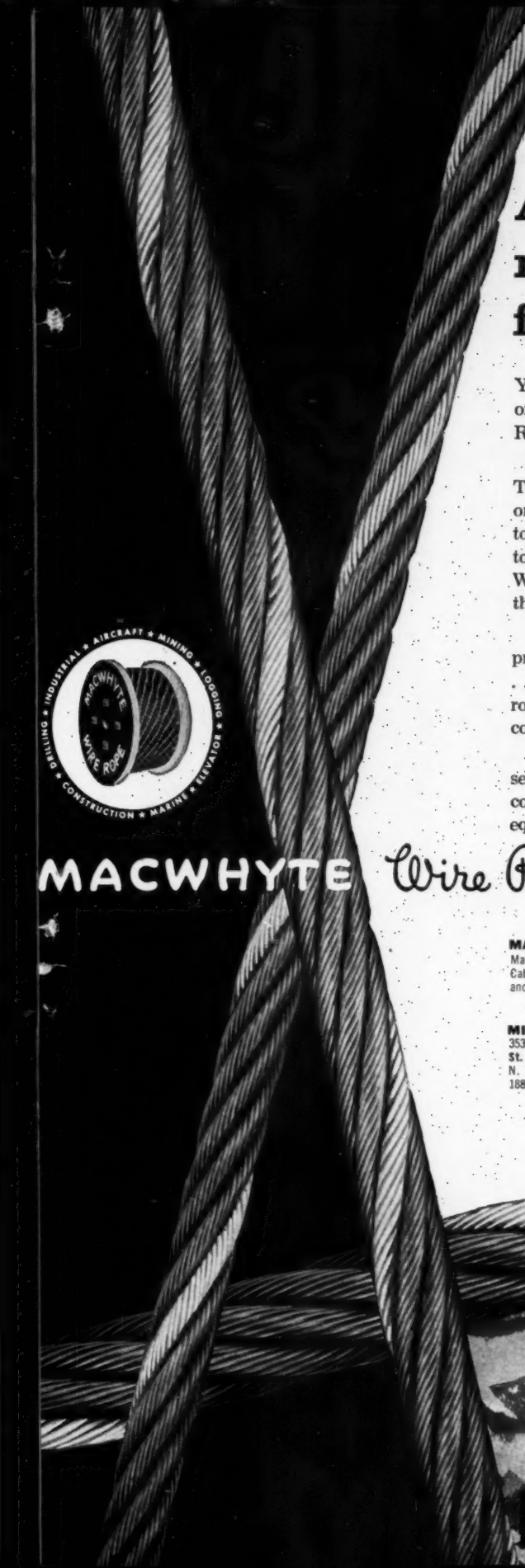
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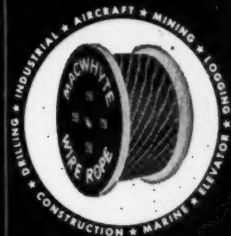
## Are you getting maximum life from your wire rope?

You can lengthen the service life — and lower the yearly cost — of your wire ropes by using the *correct* Whyte Strand Wire Rope for each piece of equipment.

What do we mean by correct? Well — all wire rope isn't alike. The demands of dragline service are different from those on scrapers or shovels. But whatever the requirements — no matter how tough the job — there's a Whyte Strand Rope specially designed to withstand the particular abuses of *each* kind of service. What's more, we'll be glad to recommend which of Macwhyte's thousand-and-one ropes is the *best* for *your* kind of job.

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Ask your Macwhyte distributor for help in getting maximum service life from your wire rope. He'll be glad to give you a correct rope recommendation for each rope on every piece of your equipment. Don't guess when you can be sure. Call him today!



# MACWHYTE Wire Rope COMPANY

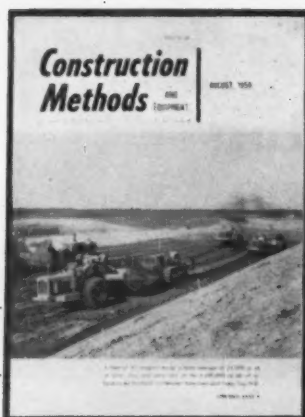
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AUGUST, 1958

## Pay Dirt in This Issue

### ON THE COVER

These LeTourneau-Westinghouse scrapers, push-loaded by Caterpillar D9 tractors, move a daily average of 75,000 yd of sand, clay, and some rock on the largest single road job ever let in North Dakota. It's a 40-mi relocation of U.S. 10 between Jamestown and Valley City. Joint venturers Tennesfos Construction Co., William Collins & Sons, and Schultz & Lindsay Co. will move more than 6,400,000 yd of material.

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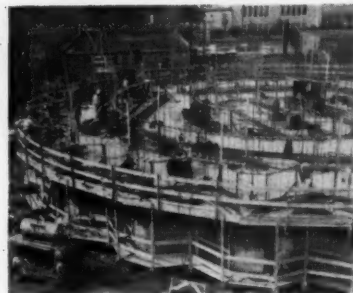
### NEXT MONTH

There are as many applications for Bailey bridging material as there are contractors who use it. Ingenious construction men have made buildings, conveyors, falsework, and gantries from Bailey units. Our special report on the subject next month describes the varied jobs that Bailey equipment is doing in all types of construction.

### Three Slip Forms

#### Raise a Water Tower . . . . 72

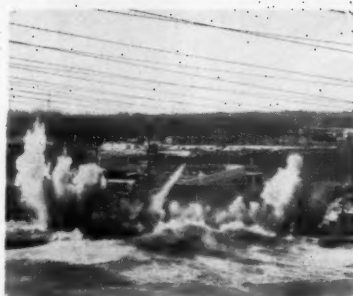
Three sets of slip forms help build a 2,000,000-gal prestressed concrete water tower in Tyler, Tex. It took special planning but saved the contractor time and money.



### Underwater Air Fence

#### Confines Blast Shock . . . 78

Two new techniques for underwater blasting set up a barrier of air around the explosion and allow a contractor to blast safely even in the vicinity of structures or ships.



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Earthen causeways pushed out into the strong currents of the Missouri River are tricky to build, but they permit contractors to build piers for two bridges in the dry.



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# What's **YOUR** **TRUCK** **CRANE** **JOB?**

## **NORTHWEST** **25 Ton - 35 Ton** **TRUCK CRANES**

ALL OVER THE COUNTRY — from California to New England — from Minnesota to the deep South, Northwest Truck Cranes are proving their versatility in handling jobs of all kinds.

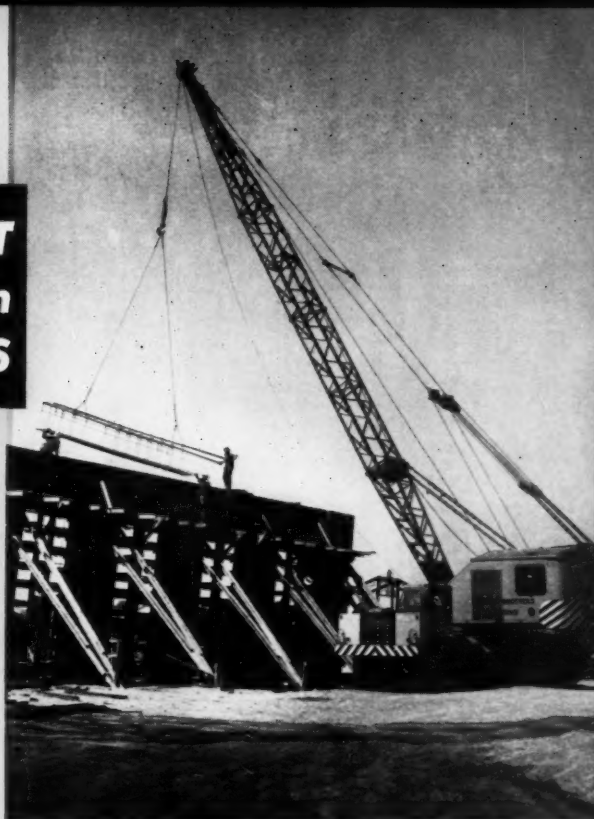
Here is a choice of rubber tired units that bring you a combination of advantages that make money.

Independent High Speed Boom Hoists are ruggedly built for hour in and hour out service — power controlled in both directions and operating independently of all other machine functions, Sectional Boom Hoist Rigging and Pendant Lines, Pivoted Gantries, Telescopic Boom Struts, Adjustable Jibs, Removable Counterweight, 3rd Drums and a host of Carrier advantages all combine to permit the maximum in flexibility to get the job done quickly and profitably.

There is a lot to learn about these machines. Ask for a catalog on the size you need.

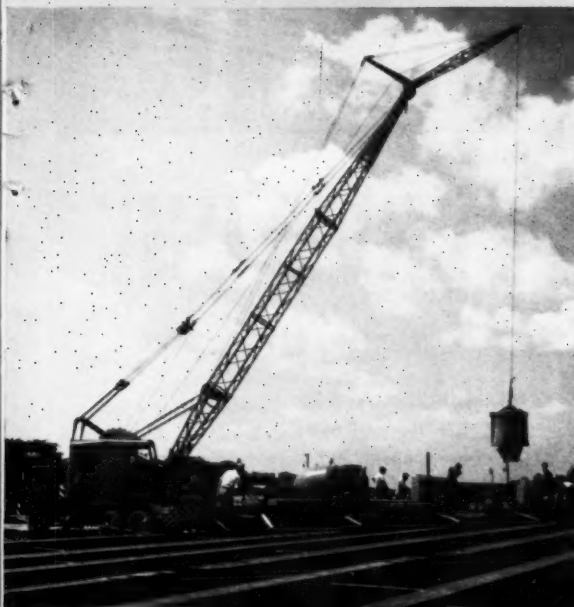
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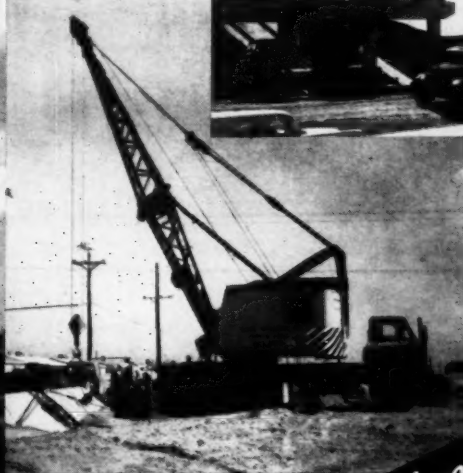


Above: Heavy steel calls for careful handling and accuracy. The Northwest is a 35 ton Truck Crane.

... for more details circle 293 on enclosed return postal card



Left: Northwest 25 ton Truck Cranes are speeding up many concrete jobs. They bring you smooth booming, plenty of reach and perfect control of the load.



Above: Two Northwest 25 ton Truck Cranes coordinate smoothly to set a precast concrete Beam on an overpass job.

Left: A 35 ton Northwest Truck Crane resets a large concrete tank.

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#### **NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES**

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**CRANES**  
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Capacity

**DRAGLINES**  
¾ Yd. to 3 Yd.  
Capacity

**PULLSHOVELS**  
¾ Yd. to 2½ Yd.  
Capacity

**TRUCK CRANES**  
25-Ton and 35-Ton  
Capacity

(Advertisement)

**AN ESTIMATED** 73% of the petroleum requirements on major St. Lawrence Seaway projects have been supplied by Texaco. Picture shows Bill Partisch (left), Texaco Lubrication Engineer, and Vic Pandolfi, Equipment Superintendent, discussing the Texaco Lube Plan, represented by the numbered barrels. In background, upstream side of Barnhart Island Power Dam and Robert E. Saunders Generating Station designed to generate 1,880,000 kilowatts. Construction of the 3,230-ft. wide, 167-ft. high concrete gravity dam involved excavation of more than 2,500,000 cu. yds. of earth and placing of approximately 2,000,000 cu. yds. of concrete. Dam is a joint project of the Power Authority of the State of New York and the Hydro-Electric Commission of Ontario. Contractors for both U. S. and Canadian sides used Texaco lubricants and fuels, the Canadian contractors being supplied through McColl-Frontenac Oil Co., Ltd., Montreal, a Texaco subsidiary.



# NO MORE THAN SIX SERVE ON

**Texaco Plan reduces needed lubes to no more than six**

MASSENA, N. Y.—Barnhart Island Power Dam is the world's second largest hydro electric project (first: Grand Coulee).

A Texaco lubrication plan and the service that makes it work are credited by the contractor's Equipment Superintendent with playing a significant role in keeping the contractors' equipment in an operating condition.

"The Texaco Lube Plan has really helped," says Victor Pandolfi, Equipment Superintendent for Perini, Walsh, Morrison, Kiewit, Utah Companies, General Contractors. "We've used no more than six high quality lubricants for the entire project instead of 15 or 20. There's been less inventory. It's been simpler to service and protect the equipment. We've avoided mistakes in lubrication, and saved manhours and money."

## Most Contractors Use Plan

The Barnhart Island Power Dam is just one of the St. Lawrence Seaway projects on which the Texaco Simplified Lubrication Plan has been used. It's estimated that 73% of the petroleum requirements for the Seaway have been supplied by Texaco, and that most maintenance programs have included the Lube Plan.

The Plan has been endorsed for the following reasons: proper lubricants are recommended; less storage needed, reduced confusion and misapplication; lower handling and maintenance costs; less time lost by equipment; fewer lubricating errors; time and money saved.

## Developed on the Job, For the Job

The Texaco Simplified Lubrication Plan was developed





# THE ST. LAWRENCE POWER DAM

from on-the-job experience in all types of construction work. It's tailor-made for the work to be done. Lubricants may vary from job to job because each Plan is set up to meet the specific needs of a specific project. But regardless of the job, the basic fact remains that—no more than six lubricants are needed to handle all major lubrication.

Here are the six lubricants, illustrated above, used on the Barnhart Island project:

(1) For engines: *Texaco Ursa Oil Super Duty Special*; (2) for chassis, wheel bearing and general grease lubrication: *Texaco Marjak Multi-Purpose 2*; (3) for hydraulic units: *Texaco Regal Oil R&O*; (4) for transmissions and differentials: *Texaco Universal Gear Lubricant EP*; (5) for wire

rope and open gears: *Texaco Crater*; (6) for enclosed reduction gears: *Texaco Gear Lube HD*.

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your project. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



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(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

**CATERPILLAR**

# BUILDING THE WORLD'S MOST PRECISELY ENGINEERED HIGHWAYS

A fleet of CAT-built machines worked to exacting standards constructing loops for the AASHO Road Test. Grading operations alone required 114 engineers and technicians, 50,000 tests.



Caterpillar DW21s and DW20s with Scrapers helped move 1¼ million cu. yd. of earth in 3 months. At peak, more than 25,000 cu. yd.

were moved daily. About half of this was placed in the upper three feet of embankment under strict controls for uniformity.



Caterpillar D8 Tractors pulled pneumatic rollers for precisely measured compaction. Gross weight of the unit is 15 tons; weight

per square inch of tire—425 pounds. Seven to eight passes were required to provide the density demanded.

In La Salle County, Ill., six highway test loops make up what is probably the most rigidly engineered and supervised highway construction job in history.

It had to be. For these roads are the site of the largest, most comprehensive highway research project ever undertaken. Known as the AASHO Road Test, its prime objective is "to study the behavior of pavements of known thickness under dynamic loads of known magnitude and frequency."

Results of the \$22 million test will be reported to Congress and probably will affect highway design and construction for years to come.

As is standard on any exacting, important highway construction job, Cat DW21 and DW20 wheel Tractors, D8 track-type Tractors and No. 12 Motor Graders were put to work by S. J. Groves and Sons Co. and Arcole-Midwest Corp. These machines, with their high availability record and minimum maintenance requirements, helped move 1¼ million cu. yd. of earth in 3 months under controls more strict than ever before attempted in large-scale highway construction. Grading operations were completed for four main loops of 6,600 feet each of four-lane divided roadway, a 4,400-foot loop, and a 2,200-foot loop. Total distance around each of the main loops is 3.1 miles.

For test traffic, trucks with axle loads ranging from 2,000 pounds on a single axle to 48,000 pounds on a tandem axle are scheduled to run 18 hours a day, six days a week, for two years over the five largest loops.

As the big yellow machines rolled on the job, thousands of tests were conducted continuously to assure precise uniformity of the earth in embankments. Compacted density was controlled between 95 and 100 per cent of standard maximum, and moisture content was controlled between plus or minus 2 per cent of optimum. During grading operations, 50,000 tests were performed and 114 engineers and technicians were at work both in construction control and in the materials laboratory.

As is usual in jobs where there is no margin for error, Caterpillar-built machines were at work.

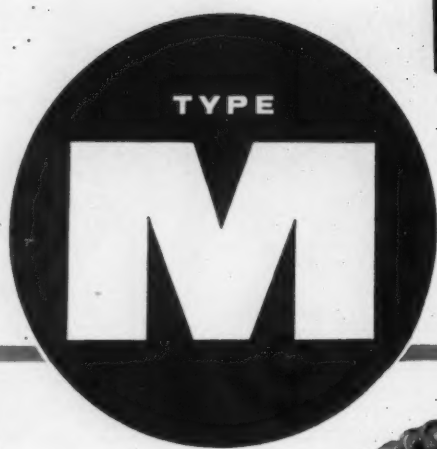


No. 12 Motor Graders, workhorses of highway construction, maintained haul roads and graded to fine tolerances. Grading was carried out in blocks 500 to 800 feet long.

**CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.**

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# INSLEY

## 20 ton lorry crane

GANTRY in low position



BACK-HITCH type GANTRY  
— from high to low position  
in a few minutes.



Removes own counterweight

### Featuring

- Full Vision Cab with large windows providing increased safety and operator comfort.
- Back-Hitch Type Gantry reduces raising and lowering time to a few minutes.
- Hammer Head Type Boom with pin or butt connections.
- Pendant Suspension with floating bridle.
- Low Axle Load Distribution for highway travel.

The INSLEY type M REMOVES ITS OWN COUNTERWEIGHT without assistance of another crane and HANDLES ITS OWN BOOM SECTIONS when changing boom length. Floating bridle connects to auxiliary ears on bottom section.

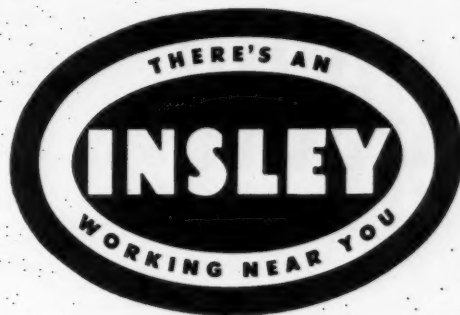
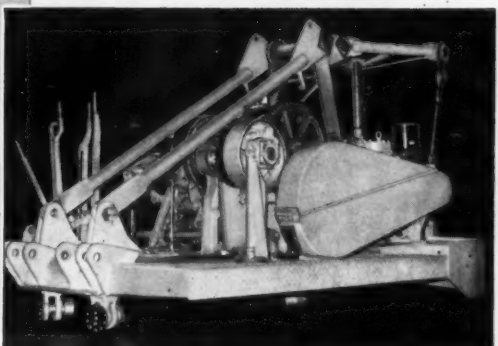
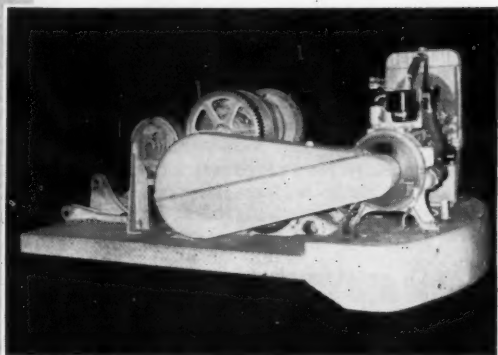
## HAMMER HEAD TYPE BOOM



Hammer head type for maximum hook block clearance. Pin connected boom may be folded. Auxiliary ears are provided on bottom and intermediate sections for folding and changing boom sections.



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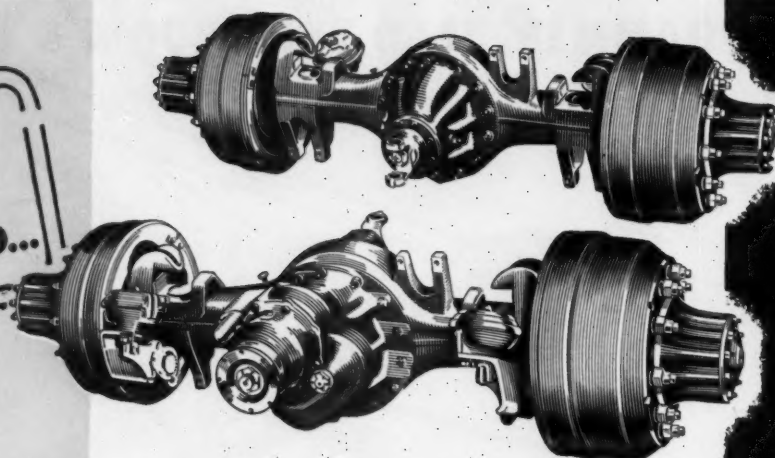
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These superior features make the difference:

Lighter than any comparable tandem on the market . . . but a real heavyweight when it comes to service. Besides increased payloads you get long, trouble-free service and lower operating costs. Time-proved, Timken-Detroit Lightweight tandem features include:

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**WORLD'S LARGEST MANUFACTURER OF AXLES  
FOR TRUCKS, BUSES AND TRAILERS**



Products of **ROCKWELL-STANDARD** Corporation



# Construction News From Washington

Washington, D.C.  
August, 1958

## Roadbuilding at a Record Rate

Highway construction across the nation is rolling along—at a record pace. Award of construction contracts for all types of roads moved sharply higher in June and the increase continued through July.

The Bureau of Public Roads says the volume of contracts for the Interstate Highway System awarded in June was almost double the May total—\$195 million for 469 mi of the network compared with \$105 million for 215 mi in May.

BPR reports that a total of 3,167 mi of the Interstate System was under construction on June 30. This work will cost an estimated \$1,740 million.

In addition, construction was under way on 23,330 mi of primary, secondary, and urban highways. Estimated total cost of this work is \$2,220 million.

For all types of roads, contract awards in July were about 20% higher than the 1957 total. Prospects are for an additional increase above the year-ago rate later this year.

## Bright Future for Public Works

Construction on Federal projects for development of natural resources has speeded up significantly. Even greater activity is to come soon. New appropriations by Congress give more construction money than ever before to the Corps of Engineers and big increases to the Reclamation Bureau and the Atomic Energy Commission. In all, these agencies have some \$1.3 billion to lay on the line for construction between now and June 30, 1959.

A small part of the sum is to start construction of new projects that will cost well over \$500 million to complete. The new starts will require a steady growth of federal construction expenditures in future years.

## More Atomic Construction

The new atomic authorization law calls for appropriations of \$386 million for construction and acquisition of facilities by the Atomic Energy Commission. Of this \$145 million will be for a plutonium-producing reactor and \$51 million for a gas-cooled reactor to be built by the federal government if industry doesn't come up with an acceptable offer of its own. In addition there are several million dollars for five design studies to be completed by AEC by next spring. These studies would open the way for authorization of some new federal reactor projects next year.

The public-versus-private power issue was not so important this

year as in the past. The only actual power reactor proposed for construction by the Democrats—the gas-cooled—is one which President Eisenhower himself recommended to Congress.

Money for plant acquisition and construction this year will be around \$406 million. Included is some \$45 million to begin construction of the plutonium-producing reactor.

### **Billion-Dollar Boom in Airport Construction**

The coming of the Jet Age to civilian aviation means big business for construction. There has been a monumental lag in airport modernization. This fall, when the domestic airlines put their first big jet transports into service, that lag will begin to become more acute.

In the next four years, the nation's major airports need to spend more than \$1 billion—for terminals, loading fingers, concourses, ramps, aprons, hangars, cargo buildings, automobile parking facilities, runways, taxiways, and turnoffs.

Congress is in the act. The Senate has approved a bill to allocate \$100 million a year through 1963 to airport construction, with a \$75-million bonus for this fiscal year to get the needed works rolling fast. The House hasn't yet taken final action on the bill, but some extension of the Federal Airport Act—under which allocations at the rate of \$63 million a year have been made—is a certainty before Congress adjourns.

Airport design is in a state of transition. High-speed exits, to permit jets to get off runways at 60 to 70 miles per hour, are under construction now at New York's Idlewild Airport. Washington's new \$80-million International Airport, still in the planning stage, will also have them. Some federal aviation experts say airports within a few years will have underpasses and cloverleaves in the runway complex—in order to make the best and fastest use of landing space, which costs up to \$1 million or more a mile.

### **Another Federal Aid Program Gets Bigger**

Congress is working on legislation to increase the \$50-million-a-year Federal Sewage Grant Program to \$100 million a year. The proposed legislation also would increase the limit on individual grants to a top of \$500,000 or 30% of total cost—whichever is smaller—instead of the present limit of \$250,000 or 30%.

The Administration is opposed to the new program. Indeed, it made an effort earlier in the year to abolish the \$50 million grants and turn over responsibility for stimulating construction of municipal sewage plants to the states. But with strong support from the nation's mayors, from labor unions, and from the U. S. Public Health Service, the Democrats in Congress expect to pass and get into law all or most of the step-up.

An idea of just how much the federal grant programs have stimulated in the way of new construction: in the two years to June 30, 1958, projects costing \$452 million were completed. More than 1,000 projects have been completed, and 507 are under construction.



KEEP OUR  
ROADS  
ON THE

GO

# ATLAS<sup>®</sup> WHITE

## FOR GREATER SAFETY

- Reflecting concrete curbs made with ATLAS WHITE cement trace road's course well ahead of driver.
- In daylight, white curbing contrasts with highway pavement.
- At night, saw-toothed surfaces reflect headlight rays back to driver. On rainy nights, the wet curb surfaces become even more reflective.

For more information on ATLAS WHITE cement for highway construction, write: Universal Atlas, 100 Park Avenue, New York 17, N. Y.



Universal Atlas Cement  
Division of United States Steel



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W. Hodgman & Sons, Inc. tells why

# "We've pretty well standardized our



**Out of 15 motor graders operated,  
13 machines are all of one make**

"We've pretty well standardized our grader fleet," reports Kenneth Hodgman, Secretary-Treasurer, W. Hodgman & Sons, Inc., Fairmont, Minn. "It's always nice to standardize when you can, because of the savings in parts stocks, faster and easier servicing, and so forth. We've stuck pretty much to Adams' machines, be-

cause we've always had good service out of them. And our fellows all like to operate Adams.

"We've been Adams users since 1931, when we bought our first 2 Adams graders... 2 No. 51's. We just retired one of those original ones; the other we still use. We now have 2 new Power-Flow

660's, 3 regular '660's, and the rest are '610's'... 13 Adams in all. We also have 2 non-Adams."

**Use one new grader instead  
of 2 older machines**

"These new Power-Flow 660's really move a terrific windrow. In some cases one of these machines takes care of the same kind of job

†Trademark

# grader fleet"

we've always handled with two '610's' with 100 hp each. That doesn't exactly mean that they do all the work two '610's' will do. But you need only one — not two — to do the complete job.

"We've had no downtime to speak of. And parts-wise, so far, we haven't spent a nickel on the torque-converter '660's'. Our daily fuel consumption is up, of course, because we are accomplishing a lot more work. Right now I don't have any figures. But watching them move the big windrows, I'd say the Power-Flow is actually cheaper to operate than conventional gear machines. We're now planning to trade-off some more of our older '610's' for new Power-Flow's."

**Says Howard Pihlaja, Foreman . . .**

"I have never seen anything work like this Power-Flow 660. There is nothing you can't handle with it . . . the best part is the steady power supplied by the torque converter. Also like the forward-reverse shift with foot control."

Lowering the subgrade by 12", one of Hodgman Co.'s 190-hp POWER-Flow 660 graders takes a generous cut in the subsoil . . . windrows dirt for loading, on Brown County Road #3, near Hanska, Minnesota.

## Road base contractor operates in 6 states

Two million tons of base is a lot of stone and gravel. Yet that's the figure W. Hodgman & Sons, Inc., Fairmont, Minnesota, gave as a measure of its minimum annual road-building business. The company operates mostly in North Dakota, Minnesota, and Iowa; also handles large contracts in Wisconsin, South Dakota, and Colorado.

Hodgman & Sons is primarily a base contractor, with over 26 years' experience in the business. In addition to base work, contractor also supplies asphalt road surfacing where specified. The company operates 4 hot-mix asphalt plants producing over 300,000 tons annually; also handles about 100 miles of bituminous road-mix surfacing a year.

### 1957 contracts over \$4 1/2 million

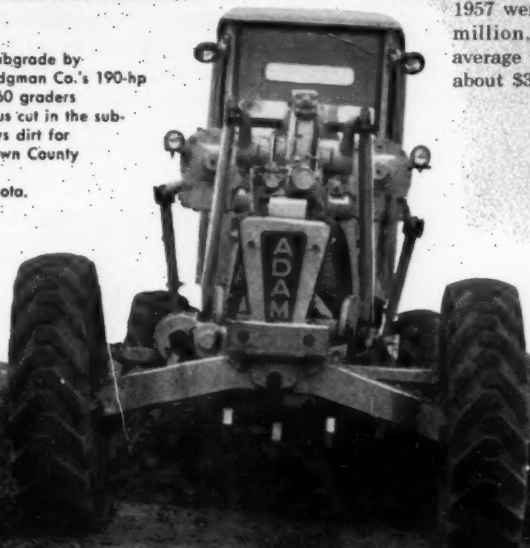
State jobs provide the bulk of Hodgman's work, with large city and county projects making up most of the balance. Company likes to bid jobs in the \$200,000 to \$1 million range. Total contracts for 1957 were over \$4 1/2 million, with the average job running about \$300,000.

All major dirtmoving is let to sub-contractors in that field. While Hodgman owns 4 or 5 scrapers, they are used only for minimum cuts, mostly for clean-up, finishing, etc. The company's main work starts with the finished sub-grade. Hodgman lays the road base or bases, then applies asphalt surfacing . . . usually 24' wide . . . and of the thickness specified.

### Big Adams fleet cuts cost

In Hodgman's fleet, motor graders are a principle item of production equipment. The company operates 15 motor graders . . . 13 Adams, 2 of other makes. Because the firm has practically standardized on Adams machines, it gets most of the money-saving benefits of a "solid" fleet: easier and faster servicing, low-cost parts inventory, operator interchangeability, etc.

Latest addition to the Adams fleet are two 190-hp POWER-Flow® 660's. The company is turning more to the heavier machines, because it finds their additional work output far outweighs the relatively small hourly extra cost of operating big equipment.



Used just one 190-hp grader for 9-mile regrading and surfacing project . . . see next page

**"We've pretty well  
standardized  
our grader fleet"**

**says Ken Hodgman  
(continued)**



**Foreman Howard Pihlaja  
says further:**

"I believe Power-Flow 660's have the most efficient set-up on a torque converter that's possible. Temperature of the torque converter oil never gets too high. With a competitive grader, on a

hard day's pull, the oil goes up to 220°. This Power-Flow converter fluid runs between 160° and 180° ... 190° at the most.

"In a day of comparable work, doing the exact same jobs, round for round, I don't think this '660' would use any more fuel than a

# **"Nothing this POWER-Flow grader**

**reports Ray G. Lloyd, operator...**

**Veteran of 21 years' operation  
likes Adams performance**

"I've been with Hodgman & Sons for 21 years, operating 'blades' most all the time. I've run Adams, Caterpillar, Galion, Austin-Western, and A-C patrols. I prefer Adams graders because I like the way they perform ... they do everything I expect a blade to do."

**Always works faster and easier**  
"This new Adams Power-Flow

660 is an improvement over all graders before. There's just no comparison! I've never run into anything this Power-Flow won't do. I've worked it against other machines, and it always does the work easier and faster.

"In mixing, the old girl really shines. It only takes about 4 passes to mix a windrow with this

big '660'. And laying a mat takes just a few more passes than a mix job. Yesterday I laid 3 miles of base ... and that's a lot of gravel in one day. I got out on the job about 8 AM, and was done a little after 6."

**Forward-reverse power-shift  
saves time**

"The feature I probably like best on this Power-Flow is the foot pedal for forward-reverse shift. When you have both hands full with your controls and steering, you don't have to bother about shifting gears, and waiting for the transmission to stop to make your



Big 190-hp POWER-Flow 660 grader, with operator Ray Lloyd at controls, scarifies at full tooth depth ... rips-up gravel and stone road surface for reggrading. Here, on Minnesota's Brown County Route #3, grader cut 12" off the top, before laying 9" gravel base and 1½" road-mix topping.

POWER-Flow 660 cuts tough sub-grade material, windrows to center of road for removal. Crawler-mounted front-end loader filled dump trucks, which hauled excess material to widen shoulders and backfill around culverts at other points along the 9.2-mile project.



regular grader. Actually, working with 50 more horsepower, it uses a little bit more fuel oil ... but it handles more work. If you figure the hourly cost, and discount it by the shorter time it takes '660' to work a mile, you'll find it costs less than with a standard grader."

## won't do"

gears mesh. All you do is give the pedal a flip with your foot, and you can reverse or go forward. That speeds-up the operation — and it's much easier on me."

### No problem of clutch adjustment

"Another thing, with torque-converter '660' I don't have to worry about clutch adjustment. If you're hogging it, or doing work where you have a tendency to slip your clutch, you could develop trouble with a friction clutch. With this torque converter, I use only my throttle to control speed ... just don't have any clutch to slip."

## One 190-hp grader for 9.2-mile Minnesota project

Action photos here show a POWER-Flow 660 at work for W. Hodgman & Sons, Inc., Fairmont, Minn. Here this powerful grader is scarifying and blading on 9.2-mile widening and resurfacing project on Brown County Road #3, between Hanska and New Ulm, Minn. Hodgman, prime-contractor, brought in just one torque-converter "660" to handle all the grader work.

### Cut 12" thru old surface

On this section, the old gravel roadbed was too high for adding the specified 9" of base and 1½" road-mix topping. So the big "660" with 5-tooth scarifier, ripped-up the gravel and rock surface ... cut 12" down to sub-grade ... wind-rowed the material in the middle of the road. A front-end loader heaped the spoil into dump trucks, which hauled it down the road to backfill culverts and widen shoulders where needed.

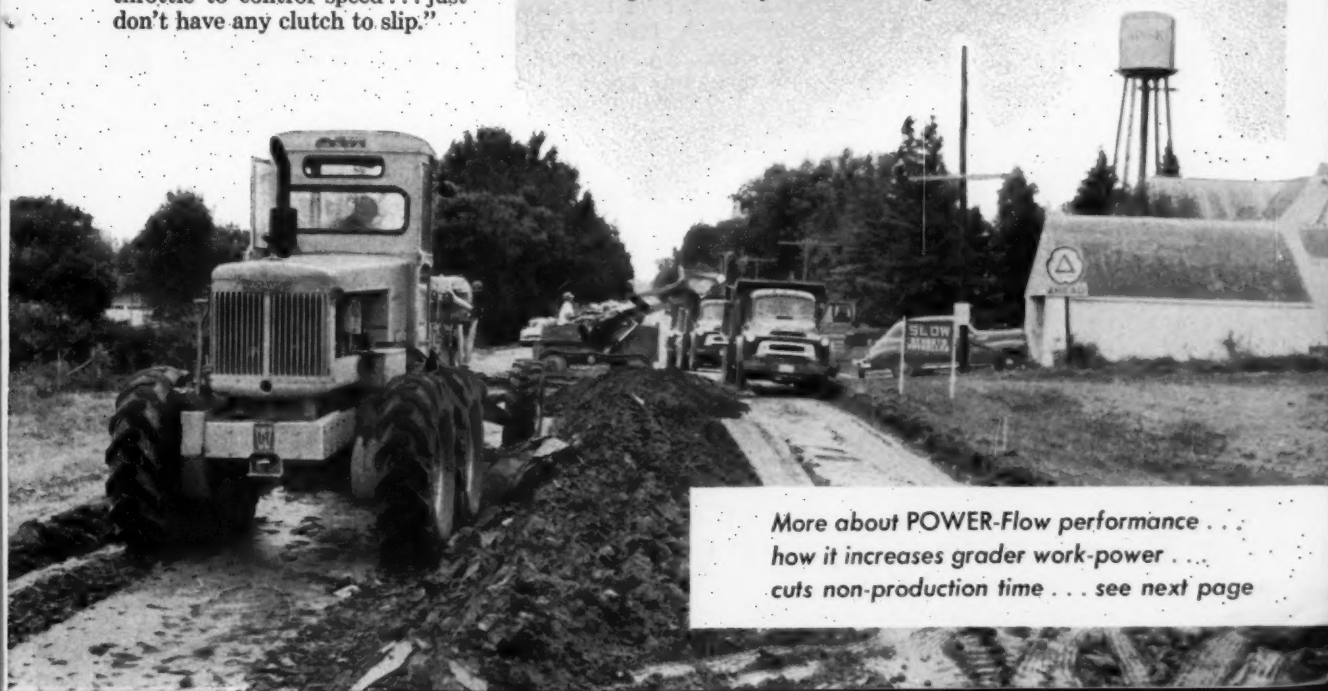
### Maximum push-power from a dead stop

Veteran operator Ray G. Lloyd worked the POWER-Flow entirely in 2nd gear-range, 0.0 to 7.6 mph. Because

grader can develop full-rpm push-power from a dead stop, he dug right in for maximum cut ... easily started the load. He continued at full power as he accelerated with grader's torque converter automatically apportioning more horsepower to forward motion. Working continuously at top-rated power, grader always scarified deep ... always cut a full blade-load ... always produced at maximum pace for each particular load.

### Protects grader, operator, in rocky soil

Surface and subsoil rocks were a hazard — but they didn't bother the machine or operator Lloyd. Whenever the grader hung-up on a rock, "660's" torque converter cushioned the impact. There was a quick deceleration and a moment's hesitation, before the governor would start to feed more fuel to step-up engine rpm. This gave Ray Lloyd time to either stop and back-up for a new "bite" ... or to quickly reduce depth of blade or scarifier. Thus he could work fast, without fear of getting himself "banged-up", or of damaging blade, engine, or transmission.



More about POWER-Flow performance ...  
how it increases grader work-power ...  
cuts non-production time ... see next page

"We've pretty well  
standardized  
our grader fleet"

says Ken Hodgman  
(continued)



Operator Ray Lloyd  
says further:

"We have a lot of rocks and boulders in this country. When I hit something solid, this Power-Flow machine slows-up and kinda gives with it. If I hit a rock, or hook a curb and gutter, it doesn't throw me, smash anything, or rip-up a

curb. When it hesitates, I can adjust the controls or stop the machine. Saves a lot of wear-and-tear on the blade and gears."

**Maintenance and  
fuel costs low**

"I'd say there was close to 1000 hours on this Power-Flow. There hasn't been any maintenance on

## Adams POWER-Flow 660...Go-power to

On every one of your roadbuilding and production dirtmoving jobs, the GO-power of an Adams POWER-Flow 660 grader cuts costs, and increases your profit. Big "660" gives you more push-power, completes tasks faster, spends more time on dollar-producing work... reduces grading cost per mile of road, or per yard of dirt. It gives you the precision, and easy-operating advantages of a standard (fixed gear-ratio) "660", plus:

- 27% more engine power
- Torque-converter drive
- Forward-reverse power-shift

**Cuts deeper,  
pushes heavier loads**

POWER-Flow 660's push-power is not limited by low-rpm engine

power in fixed gear-ratios. You can apply "660's" full 190 hp at any speed... even from a dead stop! Torque converter gives you the effect of *infinite* gear ratios... multiplies torque for starting big cuts and heavy loads, for smoothing out unexpected resistance as you move the dirt. A tail-shaft governor automatically adjusts engine speed (and thereby, the torque multiplication), to produce whatever power you need, for pushing the load at speed called for by the throttle-setting. Engine never lugs... never stalls.

**Works at fastest  
rate possible**

With throttle at maximum setting, you get full power for the initial thrust to start the load. Then as the dirt starts rolling, grader picks up speed. As less-and-less

power is needed for "push", "660's" torque converter automatically apportions more-and-more horsepower to working speed... matches power to the load... brings grader up to *fastest possible* pace for each bladeful.

**Less non-productive time**

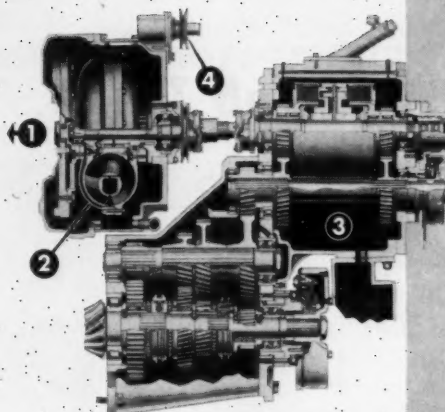
POWER-Flow also produces more work because it "keeps its nose to the grindstone"... wastes less time in travel and maneuvers. Between work assignments, or between tasks on the same job, 190-hp "660" travels at up to 27.4 mph... gets on the job fast... begins work sooner, finishes it sooner. And, on one-way blading, this grader backs-up at fastest practical speed (to 24.4 mph)... starts the next "pass" while other graders are still lumbering back to the beginning of the cut.



On Brown County (Minn.) Route #3, POWER-Flow 660 grader cuts new sub-grade for W. Hodgman & Sons, Inc., Fairmont, Minn. Grader's torque converter matches power to the load... always moves dirt at fastest possible rate for each particular blade-load.

it, except for greasing and oiling.

"There's not much difference in fuel consumption between this '660' and friction-clutch graders. It can do the same work as other machines... but so much easier and quicker. So, in spite of a small plus in cost, I feel it's actually more economical."



**1 190-hp engine:**

your choice, Cummins or General Motors diesel.

**2 Torque converter:**

single-stage type; multiplies load-starting torque 3-to-1... gives effect of infinite gear ratios for continuous full-rpm operation... absorbs load shocks and prevents the engine from stalling.

**3 Forward-reverse power-shift mechanism:**

hydraulically operated clutches — controlled by 2-position foot-treadle — engage forward or reverse gear-sets for instantaneous change of direction, without hand shifting.

**4 Tail-shaft governor:**

automatically changes fuel setting to maintain constant grader speed, as pre-selected by operator.

# boost contracting profits

**No delays for hand-shifting to change direction, speed or power**

Under normal conditions, your operator starts-off by shifting to the POWER-Flow gear-range suited to the type of work. Thereafter, he almost never *hand-shifts* gears again, till the job is done. Here's why:

a. Torque converter automatically provides whatever power-speed ratio is needed to handle changing work loads, as described previously.

b. Foot-operated, forward-reverse power-shift permits *instant* change of direction... keeps operator's hands free for uninterrupted control of blade and throttle. Toe-pressure on the center-pivoted, 2-position foot-treadle shifts "660" into forward. Heel-pressure shifts it instantly to reverse.

There's no delay, no apparent stop, as grader changes direction... forward or reverse. For example, at the end of a one-way cut, your operator simply rocks his heel back on the treadle. POWER-Flow automatically power-shifts from forward to reverse, in the same gear-range... and without declutching. There's no waiting for gears to slow-down

... no stopping while busy hands perform many functions. POWER-Flow 660 works, maneuvers... seldom stops. It produces more per hour... boosts your profit on grader operation.



**SEE IT WORK:**

To really appreciate the GO-power of this machine — its extra work-power and cost-cutting speed — you should see it in action. Write or call us, and we'll set up a date for a demonstration. There's no obligation, of course.

G-1790-DCJ-6



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# LABYRINTH WATERSTOPS

**A SOUND INVESTMENT  
FOR CONCRETE CONSTRUCTION!**



LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

## ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).
2. Then consider how important safe, secure *watertight* concrete joints are.
3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form ... easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

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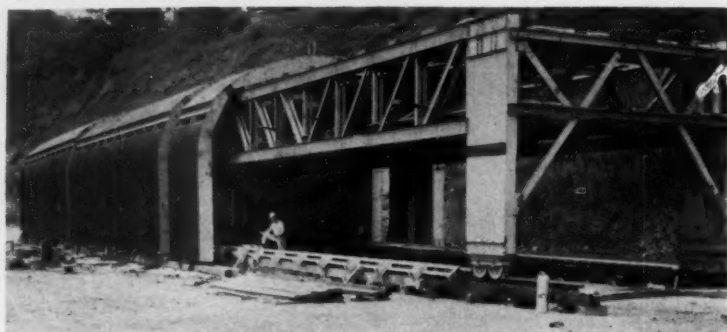
Name

Company

Address

City  Zone  State

## Job Talk...



## Tunnel Forms Set Up Early

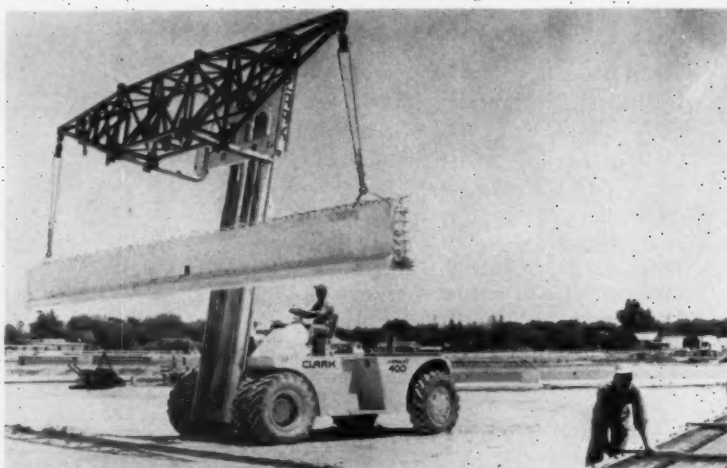
Concreting is now under way on Pittsburgh's new Fort Pitt vehicular tunnel, but Merritt-Chapman & Scott Corp. assembled the forms in front of the tunnel months ahead of time to make sure everything was set to go.

The Blaw-Knox forms are seven years old. Perini used them in 1951 in construction of the Squirrel Hill Tunnel, another link in the Penn-Lincoln Parkway. Only modification to the forms for

the new job was installation of higher arch panels.

M-C&S set up the forms in front of the tunnel in three 50-ft sections. Each form unit travels in the tunnel on a jumbo which strips, telescopes, and moves it through other units still in place as concreting advances.

Wires welded to the skin-plates of side panels score the concrete and provide a better bonding surface for the tile lining.



## Boom on Fork Lift

Dura-Stress, Inc., of Leesburg, Fla., manufacturers of prestressed concrete structural components, have eliminated damage to precast members during stripping with an attachment for a fork lift truck. They added a 36-ft-long boom to a Clark Cy-400 to lift members from the casting beds.

Before development of the boom-fitted fork lift, precast double tee and channel sections were chipped and cracked from the

shock caused by sudden breaking of the bond between concrete and forms.

The 36-ft-long boom is made of tubular steel and angle iron bracing. Sleeves fit the boom onto the forks of the lift truck and permit easy removal for normal material handling operations. With the attachment, the fork lift is capable of carrying structural members 80 ft long.

*continued on page 27*

**It's the handiest, most economical power-producing package in its class**

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generator set  
from  
Allis-Chalmers**

**You Can TAKE It Anywhere** — One compact, integral unit — engine, generator and switchboard. Only 68 x 25 x 37 in. over-all. Fits easily into a pickup truck or slides from place to place on steel skids. Runs on gasoline or gas.

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**But You CAN'T MATCH ITS VALUE. — ANYWHERE** — Compare in on any basis you choose — low invested cost per kilowatt, high economy per kilowatt produced and greatest engine life per dollar. This set has a heavy-duty engine specially built to operate long hours in the steady grind of generator work.

**...the G-226 POWER PACKAGE**

**ENGINE:**

Allis-Chalmers industrial  
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60 bhp at 1,800 rpm

**GENERATOR:**

3-phase, AC current, 35 kw  
Single phase, 23 kw

**DIMENSIONS:**

68 in. long,  
25 in. wide, 27 in. high

**WEIGHT:**

1,645 lb

**A  
PREMIUM SET  
AT  
ECONOMICAL  
COST!**



POWER-CRATER is an Allis-Chalmers trademark.



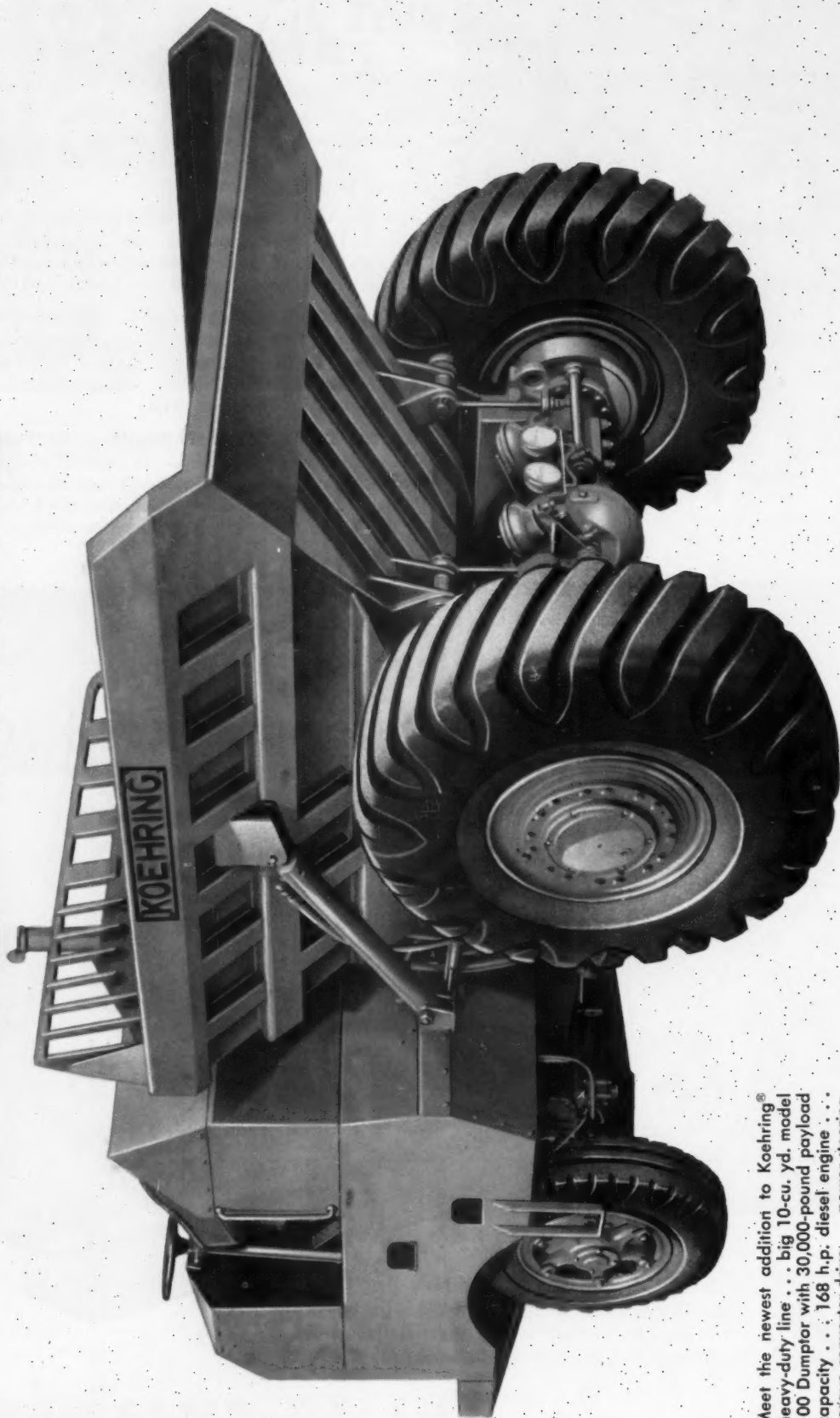
Let your Allis-Chalmers dealer explain the many other reasons why the new G-226 is the best buy in its class — anywhere. Send for Bulletin BU-412. No obligation. Allis-Chalmers, Milwaukee 1, Wisconsin.

8G-27

**ALLIS-CHALMERS**



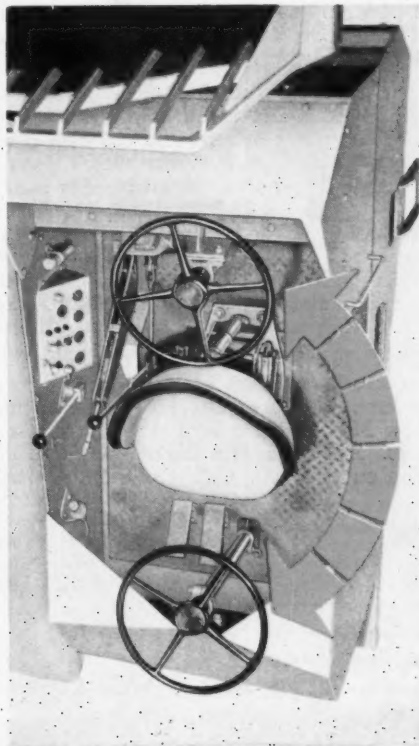
# Now... a 10-YARD Dumptor<sup>®</sup>



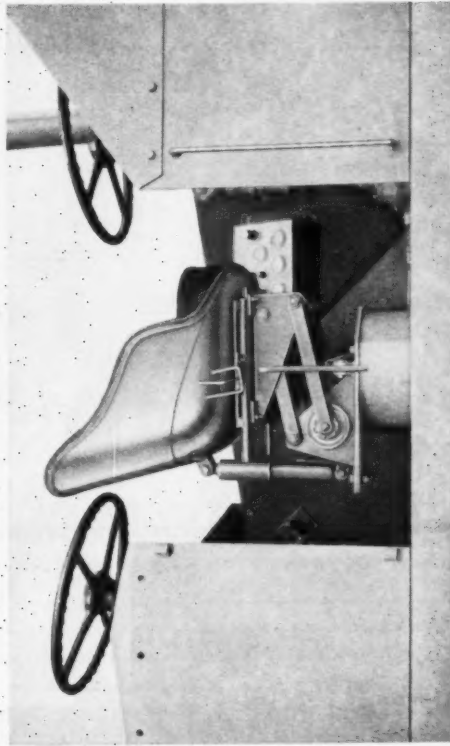
Meet the newest addition to Koehring<sup>®</sup> heavy-duty line ... big 10-cu. yd. model 100 Dumptor with 30,000-pound payload capacity ... 168 h.p. diesel engine ... torque-converter drive ... power steering.



# PIVOTING SEAT... TWO-WAY CONTROLS... for no-turn shuttle hauling



Operator always faces direction of travel ... swings around without leaving seat. Pivoting seat with 2-way Dumptor controls let him operate with equal ease, comfort and safety in either direction.



Here's a quick "preview" of new 10-yard Dumptor:

Dual steering wheels, throttle, brake pedals located at both operating positions of pivoting seat.

Directional travel and speed-range lever, and dump controls, centrally-located for 2-way operation.

Constant-mesh transmission hydraulic clutches give full range of speeds up to 20 m.p.h. in either direction.

Smooth torque-converter drive ... power steering ... big, safe, 4-wheel airbrakes, plus parking brake.

2 ways to dump — instantaneous, with gravity ... or controlled, with hydraulic cylinders.

All-welded, multiple-ribbed body with rock-guards ... bolted or free-swinging "kick-out" pan.

Oscillating steering axle, center-pivot-mounted ... heavy welded one-piece wishbone frame.

Big drive tires eliminate need for springs on drive axle ... no spring maintenance.

2 SIZES — In addition to this new 10-yard, Koehring also builds a smaller, companion-model 6-yard Dumptor. Both offer cost-cutting advantages you can't afford to miss. Why not call your Koehring distributor about them or write to us for information, today?

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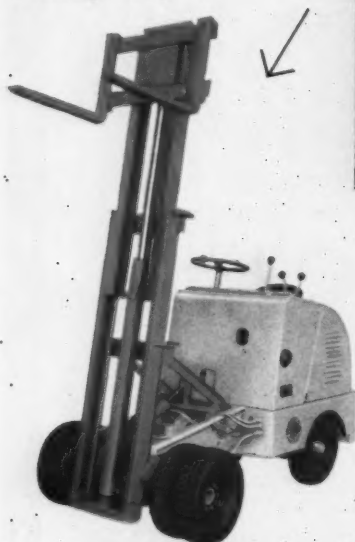
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# NOW!

## 3000-LB. LOAD CAPACITY

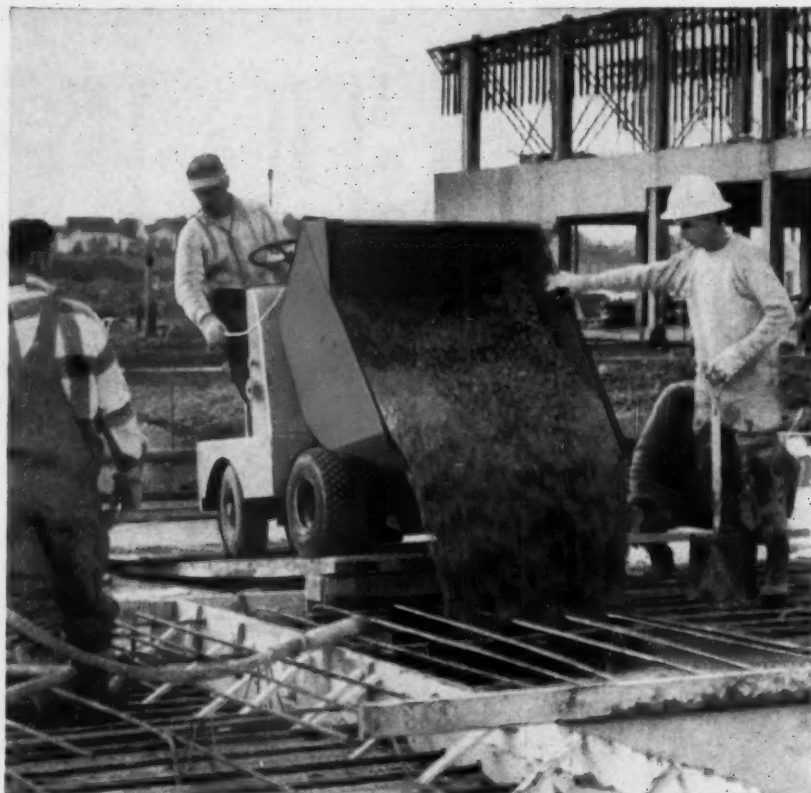
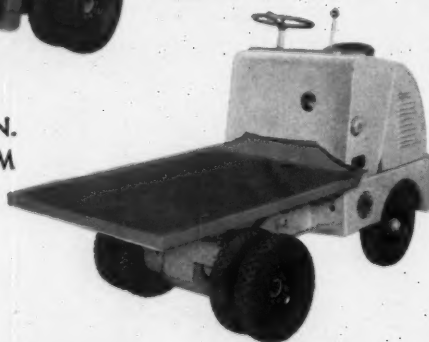
### in NEW R-18 Moto-Bug®

(Does your  
lifting too)



7-FOOT  
FORK LIFT  
ATTACHMENT

42 x 54-IN.  
PLATFORM



Looking for a low-cost answer to your material-handling? Then check the big load-carrying capacity, and all-around versatility of this new Kwik-Mix R-18 Moto-Bug. As a power-wheelbarrow (above), it hauls up to 3000 pounds in 18 cu. ft. gravity-dump hopper (special tailgate body optional).

Quick change from hopper to other attachments triples the R-18's usefulness on every job. Switch to 42 x 54-in. platform, and you have a heavy-duty 1½-ton flatbed truck. When there's heavy lifting to be done, 7-foot fork lift attachment handles up to 1500 pounds (at 15-in load center). Ready to pour some concrete, or haul supplies? Just change back to hopper body — it's as simple as that, with *multiple tool* Moto-Bug on the job! (5-foot blade, towing hitch also available — has 780-lbs. drawbar pull for towing wagons, carts).

The R-18 climbs 25% ramps or grades fully loaded — travels at speeds up to 12 m.p.h., forward and reverse. There's *no clutching* — *no shifting*. Learn how Moto-Bug can save time and dollars on your jobs. Ask Kwik-Mix distributor for a demonstration on your job. Call him *today* or mail coupon.

**KWIK-MIX Company, Port Washington, Wis.**

Send literature on: ☐ 3000-lb. R-18 Moto-Bug ☐ 1500-lb. S-10 Moto-Bug

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CITY, STATE \_\_\_\_\_



KM809 CM

Other Kwik Mix products: CONCRETE • PLASTER-MORTAR • BITUMINOUS MIXERS

**KWIK-MIX®  
MOTO-BUG®**

A division of Keshring Company



### Safe Platform for Pile Rigger

Keller Construction Co. of New Orleans modified a Koehring 605 piledriver to combine safety and efficient operation. Halfway up the 72-ft-long leads, a steel platform projects from the leads to provide a safe place for a pile rigger to stand while guiding pile sections into the leads and under the hammer with a rope sling. A steel ladder attached to the lead frame connects the smaller work platforms built into the leads at 10-ft intervals.

The flexible hose which supplies steam to the Vulcan No. 1 hammer is held out of the way of crawler treads by a bracket protruding from the rear of the cab. A Mercator vertical type oil-fired boiler stationed behind the rig supplies steam.

The job is twin two-lane bridges carrying a four-lane highway over the Algiers Outfall Canal in New Orleans. Two pipe pile bents capped with concrete headers support each 30-ft center span. Each bent consists of seven 12-in. spiral weld pipe piles 120-ft long.

Driving was easy in the soft, swampy soil except for the last 30-ft which seated the piles in hard sandy clay. Difficult part of the job was getting the piledriver into position at each pier. A road provided access to only one side of the site. Keller had to drive temporary timber pile bents at 10-ft intervals and erect a trestle on top to reach across to the first pier. They then worked their way over to the other pier in the same way to complete the pile-driving part of the job.

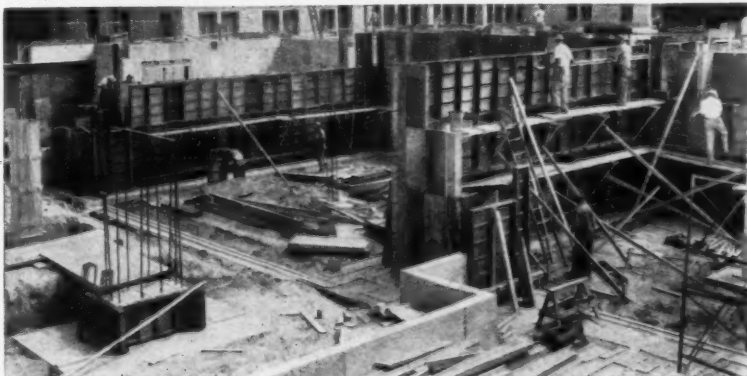
## GENERAL BUILDING with Symons Forms



**School Addition** . . . 12,000 square feet of Symons High Strength Forms were used for a total of 225,000 square feet of wall forming.



**Insurance Building** . . . Symons Standard Forms were used to frame 56,000 square feet of Spandrel Beams. Symons Shores used throughout in beam construction.



**Church** . . . About 30,000 square feet of forming was completed with Symons Forms. Wall thicknesses varied from 12" to 20" and in heights from 4 to 14 feet.

Symons can help you with your forming problems. Our engineers prepare complete form layouts and bill of materials at no obligation. Other Symons products used in general building are column clamps and shores. Forms, shores and column clamps may be rented with purchase option—rentals to apply on purchase price. Information on Symons products and services sent FREE on request.

 **Symons CLAMP AND MFG. CO.**

4255 Diversey Avenue

Dept. H-8

Chicago 39, Illinois

**MORE SAVINGS FROM SYMONS**





**"This machine has the balance, stability and speed to outdo all other loaders in this size range"**

That's how G. C. Collins of Collins Bros. Contracting Co., Memphis, Tenn., refers to the 1¾-yd. Model 12 "PAYLOADER" tractor-shovel.

Collins has been using tractor-shovels of various kinds in his excavating and grading business through the years, so he and his foreman and machine operators are tractor-shovel "veterans". They know what each model can do and how easy they can do it.

Collins' Foreman, Billy M. Garrett, has this to say about the Model 12: "I like the foot control of the speed when approaching trucks that leaves both hands free for other controls and no clutch to work".

His operator, J. T. Parish, says, "In my 27 years as an operator, the Model 12 is the fastest machine I have ever worked and is very easy to control."

This refinery job, as an example, involved expanding and revamping the storage capacity. It was necessary to tear down existing dirt fire walls and throw up new ones . . . to dig foundations for new tanks . . . to load out several thousand yards of dirt. The Model 12 ate up all this work easier and faster than any tractor-shovel they ever owned, and it's the machine that all four of their operators prefer to run.



**G. C. COLLINS**

"Advance design of the Model 12 "PAYLOADER" gives unequalled operator comfort, handles more yardage at lower cost per yard."

(Advertisement)

**"Does three times as much work"**

Carl Johnson of Robert A. Whitaker Co., Manteca, California, says, "Now we've got speed. Our other loader was just as big, but we're getting 3 times as much work done with the Model 12. Take this job I'm on now. It's dusty and tiresome, but the Model 12 power-shift transmission and power-steering make it easy. More comfortable position for the operator, easy controls, good vision and knowing you are knocking out the work faster makes the Model 12 the best of its kind."

**"Outproduces two other larger shovels"**

That's the word of Bud Clary of Clary & Son, Dayton, Ohio, who explains, "The Model 12's maneuverability, balance, speed, and ease of operation enables my operators to load out more yardage per hour than larger tractor-shovel units. On an airport job this summer, excavating 10" of broken concrete and 2 feet of earth, it loaded out up to 500 yards per 8 hours—considerably more than the two other tractor-shovels on the same job."

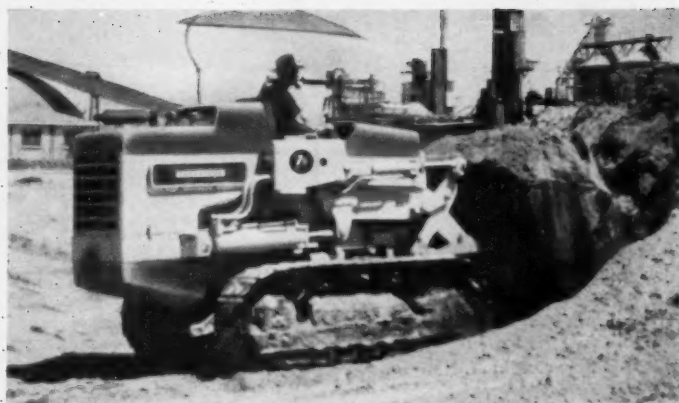
**"Cuts basement excavating time by three hours"**

John Beniger, Sheboygan, Wis. contractor continues, "It's that kind of production that puts money in the bank for me. I can also load a 10-yd. truck from stockpile in 1 minute. Best of all, I'm not all worn out at the end of the day."

"The Model 12 weight is spread out over the entire track length instead of being concentrated on the front. This allows me to work on soft, spongy ground where others can't. Less weight on the front idlers also means less strain on the entire track."

"Operating the Model 12 is a cinch. Power steering requires only a light touch on the steering levers, and there are no back-breaking foot levers to pump in the process. Any speed change up or down is made instantly, on-the-go, with only finger-tip effort. Forward and reverse shifting is just as easy."

"It's the most ruggedly built tractor-shovel I ever owned. In 1,000 hours of heavy work, maintenance and downtime has been practically zero. As far as I'm concerned, the Model 12 makes all other tractor-shovels obsolete."



Your nearby Hough Distributor has all the facts on the radical new design 1 $\frac{3}{4}$ -yd. Model 12 "PAYLOADER", the complete tractor-shovel with improved balance, speed and control "built-in". Ask him about convenient Hough Purchase and Lease Plans, too. The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.

8-C-1



Modern Materials Handling Equipment

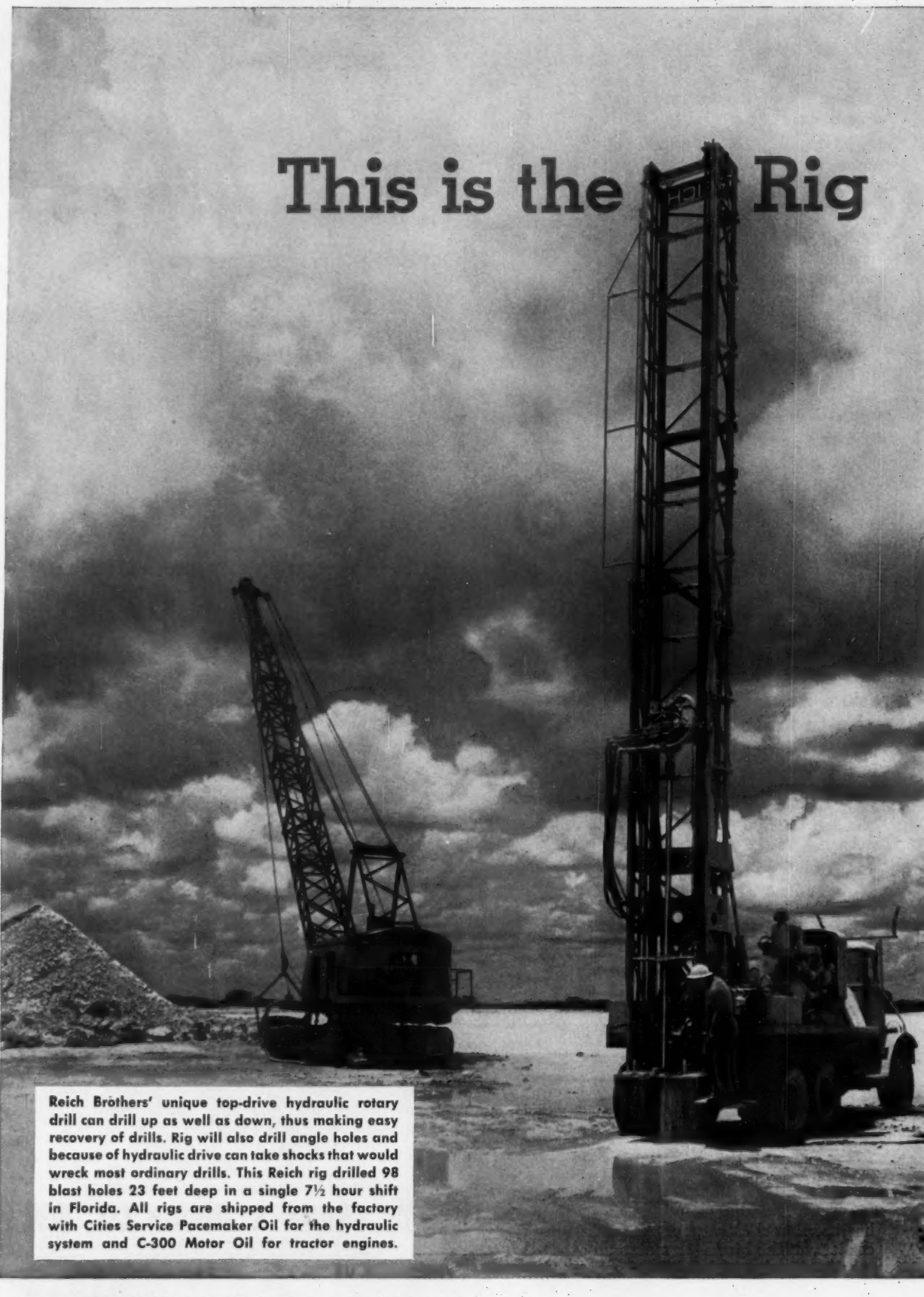
**THE FRANK G. HOUGH CO.**

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



# This is the Rig



Reich Brothers' unique top-drive hydraulic rotary drill can drill up as well as down, thus making easy recovery of drills. Rig will also drill angle holes and because of hydraulic drive can take shocks that would wreck most ordinary drills. This Reich rig drilled 98 blast holes 23 feet deep in a single 7½ hour shift in Florida. All rigs are shipped from the factory with Cities Service Pacemaker Oil for the hydraulic system and C-300 Motor Oil for tractor engines.



# that Reich Built

## ...and Cities Service lubricates it!

Shortly after World War II, Reich Brothers Manufacturing Company of Terre Haute, Indiana, designed and built the first top-drive hydraulic rotary drilling machine.

With a 90 foot stroke and the ability to withstand severe shock, Reich's rig gained immediate popularity and is now in service from Michigan to Malta for mines, quarries, road construction and prospecting.

Reich realized early that extreme pressure and diverse weather conditions would place a tremendous burden on the machine's hydraulic oil and if the oil failed, so also would the rig.

Cities Service Pacemaker Oil was Reich's choice, and the wisdom of their judgment is best illustrated by the fact that there's never been a lubrication failure. One rig actually drilled 98 blast holes in a single 7½ hour shift!

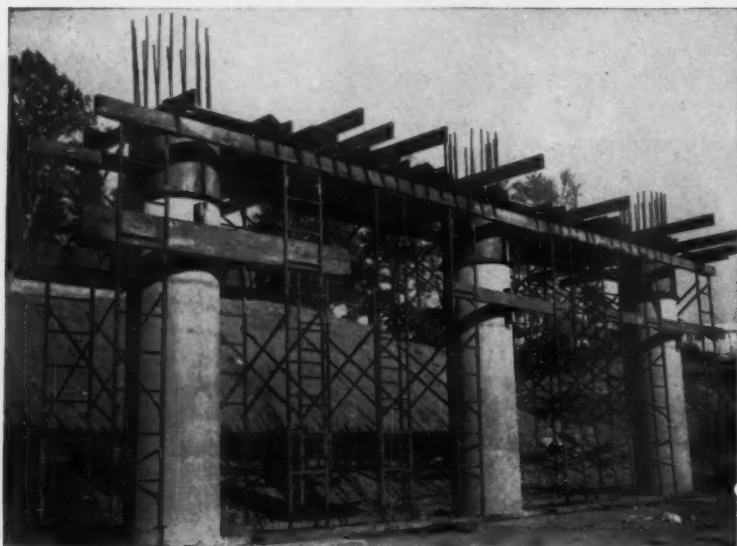
Again, for the engines of the trucks and tractors on which the drills are mounted, Reich found that Cities Service has the most suitable lubricant. All units leave the factory with Cities Service C-300 Motor Oil in the crankcase ... ready for the most rugged duty.

If you're looking for oils and greases that can take it—if, like Reich, your reputation depends upon flawless performance—you'll find the answer in Cities Service lubricants. Talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

**CITIES SERVICE**  
QUALITY PETROLEUM PRODUCTS



**Reich Builds Its Rigs to Take It! ...uses Cities Service Pacemaker Hydraulic Oil and other Cities Service lubricants for the same reason. "Under extreme weather and load conditions, they give consistently outstanding performance," says Reich.**

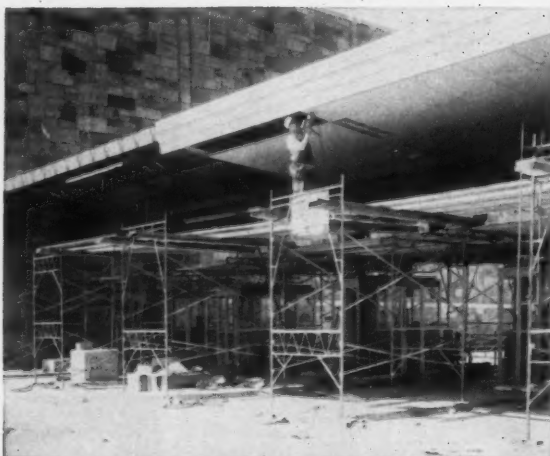


**QUICK PIER BEAM SUPPORT**—"Trouble Saver" 2'-wide Ladder Scaffold frames spaced 5' apart help contractor, M.D.A. Construction Co. provide easy access for forming work and support for one of 20 bridge piers on the Cross-Westchester Expressway, White Plains, N.Y. This photo shows forming and support for a pier beam 42" x 48" deep, 14' high. Many users of "Trouble Saver" Shoring say "its ease of handling means quicker job completion." Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that sell or rent "Gold Medal"® Scaffolds.



**CONFORMING TO CURVES**—Guy F. Atkinson Co., contractor, uses "Trouble Saver" Shoring to support Pacific Electric Ry. Co. concrete bridge, Los Angeles, over a sloped concrete channel base. Adjustable legs help meet both curves, top and bottom. Note 4" steel I-beams as stringers, furnished by PS Co.

## Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.



**FINISHING OPERATIONS**—On toll booths at the New Jersey Plaza for the New York—New Jersey Lincoln Tunnel these "Trouble Saver" fixed Scaffolds are used to provide safe, level platforms for finishing work. The scaffolding components used here are the same as those used for shoring operations. By assembling them in towers and spacing to take the load, practically any shoring job can be done.



**EASILY HANDLED BRIDGE SHORING**—5'-wide prefabricated "Trouble Saver" Sectional Steel Shoring frames are handled easily by the crew for T. M. Page and RCT Corp., joint venturers, to obtain the correct support for the Cajon Blvd. Bridge over Devil's Creek Diversion Channel, San Bernadino, Calif. Two 6'-6"-high frames, with extension legs, give 14' height. 4" steel I-beams used as stringers. 37" spacing between frames.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY



**THE PATENT SCAFFOLDING CO., Inc.**

35-21 12th Street Dept. CM&E, Long Island City 1, N. Y.  
1550 Dayton St., Chicago 22, Ill.; West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.  
In Canada: 355 Dufferin St., Toronto  
Branches in all principal cities

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

**Look ahead...*move ahead*...and stay ahead  
...with Allis-Chalmers motor graders**



**preferred by more operators...  
bought by more users every day**



Matching motor graders to job needs efficiently and economically is more important today than ever before. That's why cost-conscious owners in every part of the country are choosing Allis-Chalmers. And their operators approve that choice

because these motor graders combine top performance with real comfort and handling ease. Whether you're interested in production or utility, take a close look at the advantages these increasingly popular machines offer you.

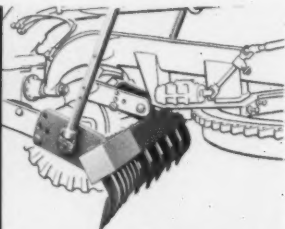


# For consistently tough work, we invite you to compare with any other heavy-duty motor grader

All-steel stand-up cab

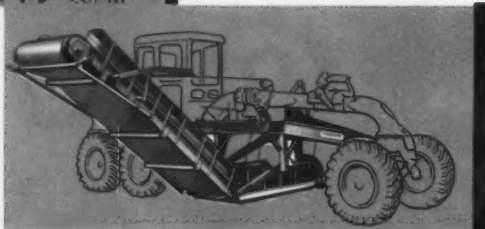


11-tooth, V-type scarifier

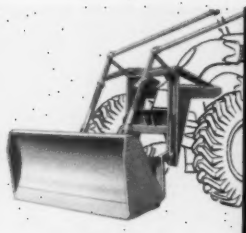


The FORTY FIVE has the power, weight, traction and speeds you need for high-production grading. Superior stability and precision control give you deep precision cuts or smooth finishes. The FORTY FIVE is built to take the shocks and strains of heavy-duty service—and to keep production steady.

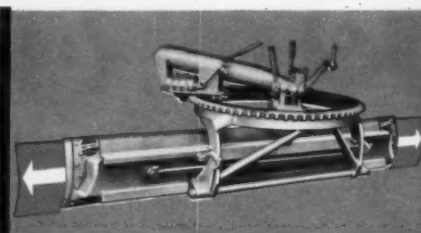
Matched attachments and accessories make the FORTY FIVE a year-round producer on scores of jobs.



Hancock elevator



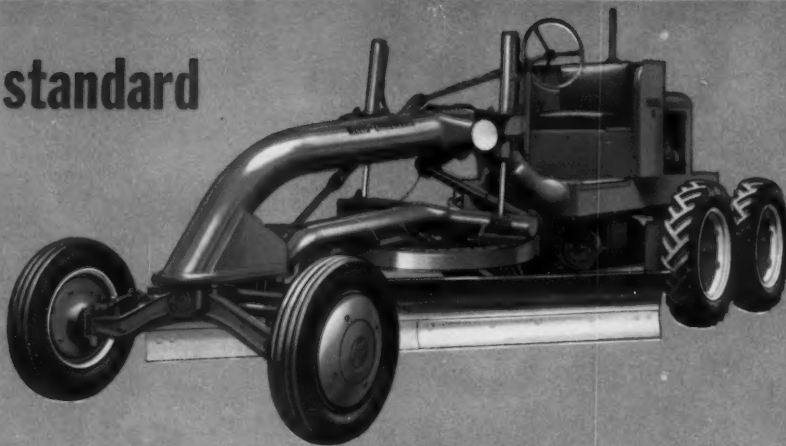
8-foot bulldozer



Hydraulic, shiftable moldboard

## model D standard

50 brake hp  
8,800 lb (gasoline)  
9,350 lb (diesel)



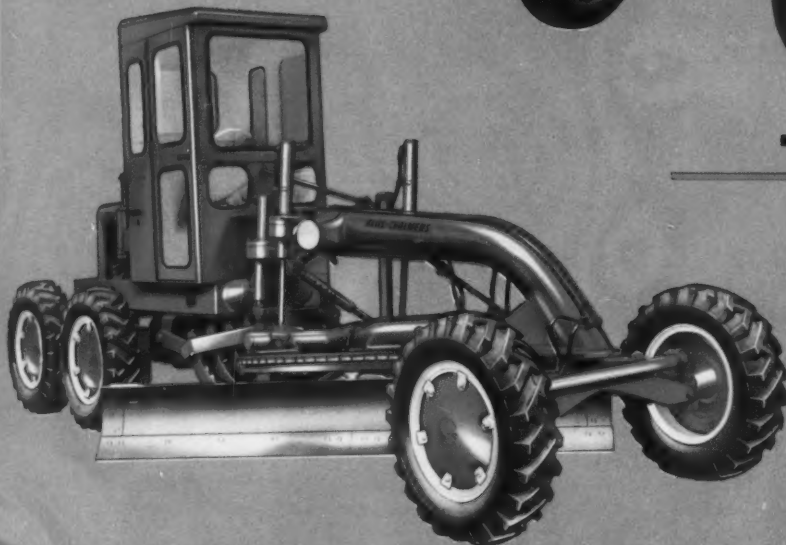
... for big economy on

## model D special

50 brake hp  
10,900 lb (gasoline)  
11,450 lb (diesel)  
4 forward speeds  
to 25 mph (approx.)  
1 reverse speed  
to 3 mph (approx.)  
All-steel cab\*

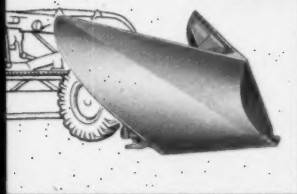
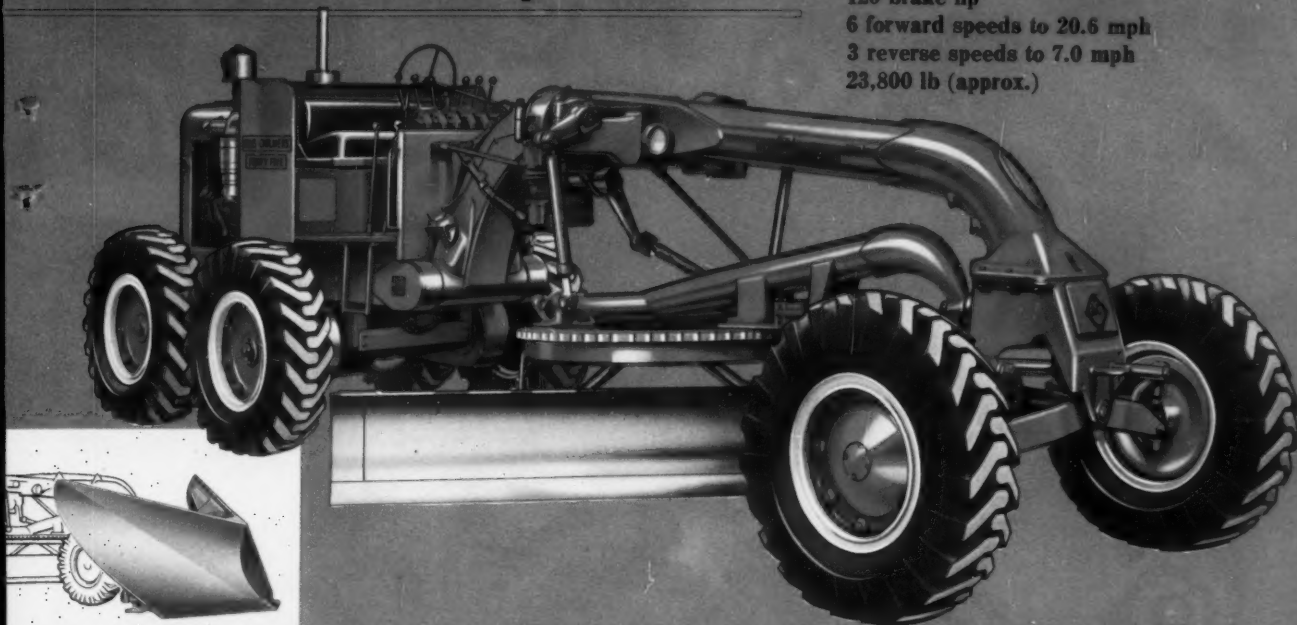
Shiftable moldboard\*  
Hydraulic scarifier\*  
Leaning front wheels\*  
Power circle turn\*

\*Also available with the Model D Standard as optional equipment.



# FORTY FIVE performance

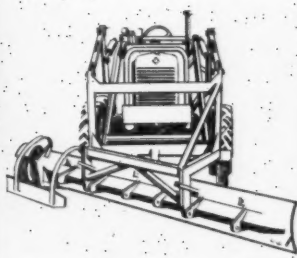
120 brake hp  
6 forward speeds to 20.6 mph  
3 reverse speeds to 7.0 mph  
23,800 lb (approx.)



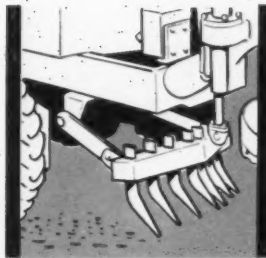
V-type snowplow



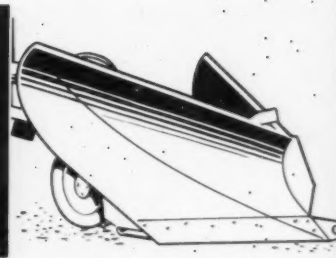
5 1/2-yd, rear-mounted loader



Interchangeable shoulder maintainer



Midship-mounted scarifier



Blade and V-type snowplows

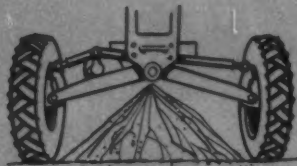
## maintenance and construction work get the model D

Here's the original low-cost motor grader with big-grader design and performance advantages. It can be yours at one-third the cost of a large grader. The Model D handles so many jobs so well, you have to see it at work to convince yourself.

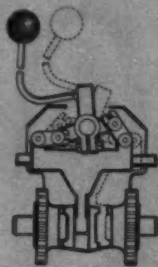
SEE MORE...ALLIS-CHALMERS ENGINEERING IN ACTION

# See these big advantages of Allis-Chalmers motor graders in a working demonstration

## FORTY FIVE



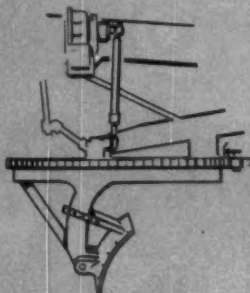
Extra high axle and throat clearance means bigger loads at the blade . . . no power wasted pushing material with axle or circle.



Toggle-type controls are exclusive with Allis-Chalmers. Controls engage or release clutches surely, quickly, without wrist-snapping backlash.



Fully enclosed power steering—full, easy control under any conditions. Hydraulic unit and lines are inside the frame . . . protected from damage.

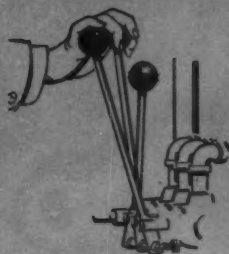


Front-mounted lift cases eliminate long shafts that twist under heavy loads. Short shafts hold blade steady even on washboard roads.

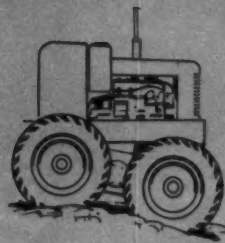
## Model D



Revolving circle and heavy tubular drawbar provide exceptionally stable mounting for the ROLL-AWAY moldboard . . . assure precision grading, trouble-free operation.

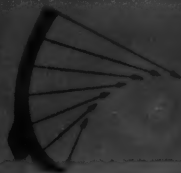


Convenient hydraulic controls—easy to operate. Two levers fit into one hand to control circle lift. Shift lever is next to the seat and directly over the transmission for positive, easy shifting.



Positive tandem drive gives you four driving wheels under the heavy end of the grader . . . providing maximum traction at all times to make the Model D easier riding, smoother blading.

And in both, the exclusive **ROLL-AWAY** moldboard



The ROLL-AWAY moldboard rolls dirt up and ahead to eliminate packing, reducing friction . . . gives you more performance per horsepower, more production per gallon of fuel.

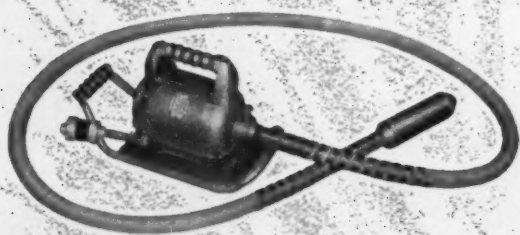


# Look ahead...*move ahead*...and stay ahead

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

# ALLIS-CHALMERS





VIBRATORS



ROTO-TROWELS

# STOW

## for DEPENDABLE CONCRETE CONSTRUCTION EQUIPMENT

Into each unit of STOW-built construction equipment goes years of research in the field, months of testing new designs on the job, plus 80 years of STOW engineering know-how. STOW maintains close contact with contractors, keeping abreast of their current problems . . . incorporating their needs into the STOW line of construction equipment.

Every day more contractors rely on STOW Concrete Construction Equipment for the dependable service and the performance today's contracts demand.

When you order concrete construction equipment, specify STOW, for top performance without expensive maintenance.

Look up your nearest STOW distributor under "Concrete Vibrators" in the yellow section of the telephone directory.

GRINDERS



VIBRATING SCREEDS



MAIL THIS COUPON

TODAY!

Stow Manufacturing Co.

31 Shear Street, Binghamton, N. Y.

I'm interested in the STOW LINE of Concrete Construction Equipment. Send complete catalog and name of nearest distributor. I am particularly interested in \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

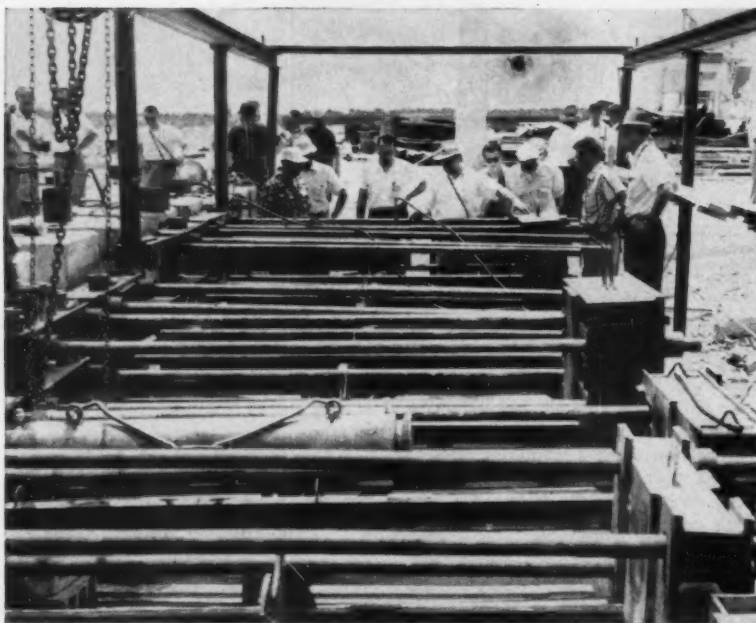
Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

(Advertisement)

# This Amazing Prestressed Concrete Industry



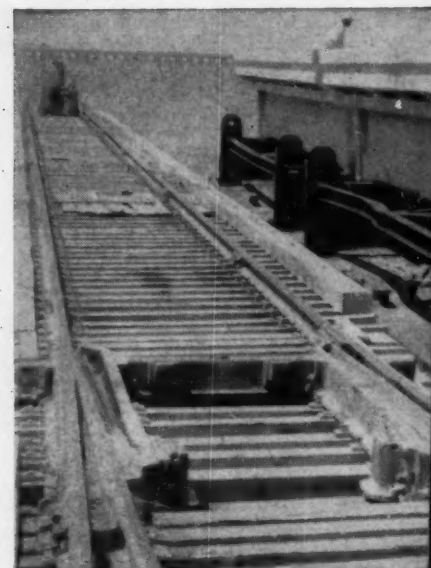
## What Is Behind Its Phenomenal Growth?

This is a question which has been asked many times. Union Wire Rope Corporation has answered with the sound reasons for venturing a huge capital investment in expanded facilities and in research to master the technical know-how of producing prestressed, stress relieved, high tensile wire and strand. Without this key element prestressed concrete would still not be possible and practical.

To check our own reasons and to develop all of the fundamental facts responsible for the spreading use and acceptance of prestressed concrete,

**We Asked A PANEL OF PIONEERS In the  
Prefabrication of Prestressed Concrete Members To  
Summarize the Facts Which Has Enabled Them To  
Maintain a Yearly Growth of 200 to 300 Percent.**

What follows is straight from the horse's mouth. It is a summary of the fundamental facts contributed by a sizeable group of prestressed fabricators and consultants. All are pioneers who have had a part in the development of prestressed concrete and experienced its growth from a trickle five years ago to become the building material to be reckoned with by every factor in the building industry.



**Here Is a List of Prestressed  
Products Which A PANEL OF  
PIONEERS Are Prefabricating**

### Girders

### Roof Slabs

Regular, Lightweight, Lift, Channel, Thin  
shell, Hollow centers, Composite.

### Beams

### Joists

### Trusses

### Columns

### Piles and Caps

Foundation, Marine, Fender

### Lintels

### Wall Panels

### Siding

### Posts

### Pavements

Highway, Airport

### Stadium

Framing, Seats

## "Future Applications of Prestressed Concrete Beyond Prediction"

These are the words of one and the consensus of opinion of others on our panel of pioneers. Other prestressed concrete products mentioned as either being prefabricated or tested and proposed are:

Missile Wings

Barges

Transmission

Line Supports

Piers

Seawalls

Wharfs

Arches

Skews

Spring Board—For

Swimming Pools

Off-shore Drilling

Piles

Platforms

While some of these may seem novel, many will become commonplace. Prestressing concrete for barges, for example, could very well become an industry in itself as is the prefabricating of bridge members.



## PANEL OF PIONEER Prefabricators Cite These Outstanding Prestressed Concrete Advantages...

### 1. Fully Utilizes Two Inherent Strength Factors

Prestressing combines and enhances the inherent characteristics of two of the foremost construction materials—

- A. The compression strength of concrete with
- B. The high tensile strength of stress relieved cold drawn steel wire and strand.

### 2. Basic Economy

- A. Steel for prestressing is six times stronger than ordinary steel but only approximately 3 times more costly.
- B. Concrete for prestressing is twice as strong but only 10 to 20% more costly than ordinary concrete.
- C. Prestressing consumes less steel and concrete to attain equal or greater structural strength more economically.

### 3. Structural Balance

- A. In prestressed concrete, stresses and strains are balanced to produce structures whose deflections are under definite control.
- B. Cracks, otherwise unavoidable in concrete, are eliminated by prestressing.

### 4. Design Economy

- A. Prestressed concrete makes possible thinner sections, lower depth to span ratios, longer cantilevering without ballast beams and reduction in weight. All of these factors enable the designer to effect savings in foundation, in columns, in wall height or to convert head room into usable cubage.
- B. Steady progress in standardization of sections under the auspices of the Prestressed Concrete Institute is making prestressed concrete more and more versatile from the standpoint of designers.

### 5. Prestressing Is Pre-Testing

- A. Because they are subjected to greater loads in fabrication than is imposed upon them in the field, precast, prestressed members are in reality pre-tested.
- B. Produced by factory methods, under closely controlled conditions, prestressed concrete guarantees the designer structural performance to meet or better expectations and affords relief from extensive supervision and inspections.

### 6. Stock Pile Availability

- A. Factory line production methods with

time saving devices insures delivery of prestressed concrete members from the production line in step with contractors work schedules.

- B. Production of prestressed sections proceeds at top speed, affording maximum utilization of labor and stockpiling against projected construction.
- C. Prestressed concrete eliminates construction delays by by-passing materials in short supply or on extended backlog delivery.

### 7. Speeds Up Construction

- A. Construction by the older, conventional methods involves both erection and fabrication on the job site.
- B. The latter is accomplished much faster in central plants or on the site-mechanized plants and the resulting prefabricated units are erected with clock-like precision.
- C. Often it is possible to complete structures in half the time required by conventional methods. It is often possible to erect prestressed concrete in the time required to make, place and shore up forms for poured in place concrete.

### 8. Permanence of Concrete—Plus

- A. Well known is the durability of concrete. Well known too is its vulnerability to cracking. Cracks lay it and its reinforcing open to deterioration.
- B. Prestressing makes concrete a flexible material with the ability to withstand extraordinary deflection and recover without cracking.

### 9. Insurance Savings

Comparison of insurance premiums are

reported on new buildings with prestressed concrete roofs as against old buildings with wood roofs. Roughly the yearly premium on the latter is more than for 5 years on buildings with prestressed roofs. Though this is a comparison of extremes, it is indicative of how prestressed construction is regarded by insurance companies.

### 10. Economy of Maintenance

- A. Even in marine construction or in construction subjected to other extreme corrosive conditions, the cost of maintenance on prestressed concrete construction ranges from nil to the expense involved in painting in cases where color is desired.

### 11. Widely Competitive

- A. The initial cost of prestressed concrete, is such as to enable its prefabricators to successfully bid against the permanent, fire resistant, all-weather types of construction in many types of structures.
- B. When the collateral economies effected by prestressed concrete, such as greater and more flexible strength for longer spans and fewer columns, balanced stresses and strains and controlled deflection, thinner sections, lower depth to span ratios, lower wall heights and increased usable cubage, ready availability, speedier erection, negligible maintenance and lower insurance premiums are considered, then the competitive edge is definitely on the side of prestressed concrete for a growing list of structures.

So goes the summary of the thoughts of a panel of pioneers except for a warning which was sounded: Be sure of adequate capital and technical guidance when venturing into the business.



**TUFWIRE**

Stress-Relieved Wire &  
Strand For Prestressed Concrete

**union Wire Rope corporation**

2270 Manchester Avenue  
Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

SUBSIDIARY  STEEL CORPORATION  
Kansas City 26, Missouri





MARINE FENDERS



## Takes Rock and Roll without a Toll!

An ocean liner is brought alongside the dock. What if her immense tonnage is pressed a bit too hard by the wind or tide? That could mean heavy damage to the ship and the dock. That is, unless the dock is equipped with U.S. Rubber Marine Fenders.

These rugged shock absorbers stand up to the most crushing batterings, impacts and squeezings. They are perfect cushions that protect docks and ships against impact loads; also used as mats on tugboats, as bumpers

on loading platforms, as guard posts in parking lots.

**ASK for our technical catalog.** It contains marine fender dimensions, shock absorption data and other engineering facts which enable the engineer to write in marine fender specifications and materially reduce construction costs, both new or for modernization.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



Mechanical Goods Division

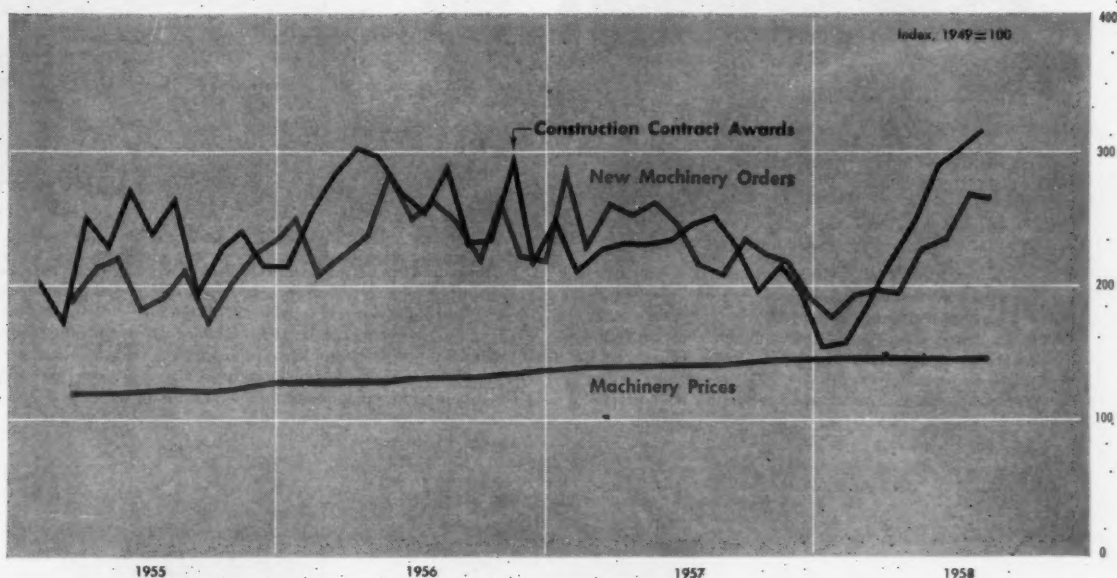
# United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N. Y.

In Canada: Dominion Rubber Company, Ltd.

# Trends in the Machinery Market



## Price Index

	JUNE 1958	MONTH AGO	YEAR AGO	% CHANGE 1957-1958
All Types of Equipment	165.5	165.5	157.6	+ 5.0
Cranes, Draglines, Shovels	163.8	163.8	159.5	+ 2.7
Shovel, 1/2 cu yd	154.0	154.0	150.9	+ 2.1
Shovel, 3/4 cu yd	167.7	167.7	162.9	+ 2.9
Shovel, 1-1 1/2 cu yd	178.4	178.4	172.4	+ 3.5
Shovel, 2-2 1/2 cu yd	154.4	154.4	143.7	+ 7.4
Shovel, 3-3 1/2 cu yd	162.7	162.7	158.3	+ 2.8
Shovel, 6 cu yd	180.1	180.1	173.2	+ 4.0
Crane, truck mounted	164.2	164.2	162.1	+ 1.3
Crane, tractor mounted	135.1	135.1	126.6	+ 6.7
Bucket, clam shell	152.7	152.7	152.7	0
Bucket, dragline	180.8	180.8	180.8	0
Scrapers and Graders	158.8	158.8	150.1	+ 5.8
Scraper, 4 Wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd	151.3	151.3	143.9	+ 5.1
Scraper, 2 Wheel, 14-18 cu yd (a)	122.7	122.7	113.6	+ 8.0
Grader, heavy duty	164.0	164.0	154.9	+ 5.9
Grader, light & medium	161.2	161.2	152.2	+ 5.9
Tractors (non-farm, incl industrial)	180.5	180.5	169.3	+ 6.6
Wheel-type, off highway (a)	128.4	128.4	118.6	+ 8.3
Crawler-type, 45-60 dph	182.6	182.6	172.3	+ 6.0
60-80 dph	185.8	185.8	176.6	+ 5.2
80-120 dph	186.7	186.7	172.3	+ 8.4
120 and up dph	191.8	191.8	178.3	+ 7.6
Machinery, Tractor Mounted	161.7	161.7	155.9	+ 3.7
Dozer, cable controlled	151.6	151.6	149.0	+ 1.7
Dozer, hydraulic controlled	177.3	177.3	170.6	+ 3.9
Cable power control unit	147.9	147.9	139.9	+ 5.7
Loader, shovel type	153.9	153.9	149.1	+ 3.2
Specialized Machinery	150.7	150.7	144.6	+ 4.2
Ditcher	154.1	154.1	151.8	+ 1.5
Roller, tandem	193.2	193.2	181.7	+ 6.3
Roller, 3 wheel	161.6	161.6	154.8	+ 4.4
Ripper and rooter	143.3	143.3	138.1	+ 3.8
Dewatering pump, 10 M gph	111.7	111.7	108.1	+ 3.3
Dewatering pump, 90 M gph	144.3	144.3	133.3	+ 8.3
Portable Air Compressors	159.1	159.1	146.2	+ 8.8
Contractor's Air Tools	164.5	164.5	150.0	+ 9.7
Mixers, Pavers, Spreaders	149.0	149.0	142.6	+ 4.5
Mixer, portable, 11 cu ft	160.1	160.1	151.7	+ 5.5
Mixer, portable, 16 cu ft	163.7	163.7	153.6	+ 6.6
Mixer, truck, 6 cu yd	127.3	127.3	122.1	+ 4.3
Mixer, paving, 34 cu ft	185.2	185.2	176.2	+ 5.1
Concrete finisher & spreader	173.0	173.0	166.3	+ 4.0
Bituminous distributor	122.4	122.4	115.9	+ 5.6
Bituminous spreader	160.3	160.3	160.3	0
Bituminous paver	153.0	153.0	149.8	+ 2.1
Off Highways Trucks, Wagons (b)	99.9	100.0		
Contractors off highway truck (b)	99.9	100.0		
Trailer dump wagon (b)	99.9	100.0		

\* a January, 1955=100 • b January 1958=100  
BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49=100

## Orders for Machines Hit Peak in June

Contractors bought construction machines in June at a record rate for the month. This is the second consecutive monthly record.

The index of new orders received by manufacturers was 273 in June, based on average monthly volume in 1949 as 100. Though June orders were a whisker shy of the May level, when the index hit 274, they topped a year ago by 28% and were 7% higher than the previous June record, set in 1956.

The booming volume of heavy construction contracts is the reason why contractors are investing heavily in new machines. Contracts reported by Construction Methods have increased every month in 1958 and May, June, and July contracts scored record highs for those months. July contracts soared to \$2,482 million. This is a weekly average of \$496 million, a rate topped only by the December, 1950, peak of \$604 million per week (most of which represented the Savannah River atomic energy plant contract costing well over \$1 billion).

Chances are that July orders will show contractors stepping up their machinery purchases above the June rate. This is because machinery orders have not moved up as fast as contract awards.

### Machinery Prices Hold

Manufacturers' prices for construction machines showed little change between May 15 and June 15. The over-all machinery price index for June is the same as May's 165.5, based on 1947-49 prices as 100.

June thus marked the eighth consecutive month of stable prices. This contrasts with price increases of 2%-3% during the corresponding periods of 1955, 1956, and 1957. But it is similar to the price stability of 1953 and 1954; when contractors cut back buying because of a drop in construction contracts.



**This easy handling Travel-Crew Cab model carries six men in all-weather comfort to the job site. It's rated up to 25,500 lbs. GVW. Plenty of leg room fore and aft. Seats measure over five feet wide. Third door means easier access to rear. Cab and chassis are warranted *work-ready* . . . for one, low complete unit price. Six-cylinder engine economy in compact-design or conventional models. Tandem-axle models to 33,000 lbs. GVW.**



**Bonus loadspace pickup bodies up to 8½ feet long "hotshot" all-purpose loads. Floor and side-walls of all-steel construction add unit tightness and longer life. Three men ride in comfort—seat is over five feet wide. More forward vision with the biggest distortion-free windshield in its class. Add to this an economical "six," more usable horsepower, high torque at low rpm.—and, component for component, you'll get a better buy!**



# INTERNATIONAL TRUCKS



# Money-saving ways to move machines...materials...men!

**Rugged INTERNATIONAL V-8 trucks**  
*engineered by truck specialists for extra-heavy-duty work.*

**INTERNATIONAL Travel-Crew Cab trucks**  
*that haul six-man crews and full-sized loads.*

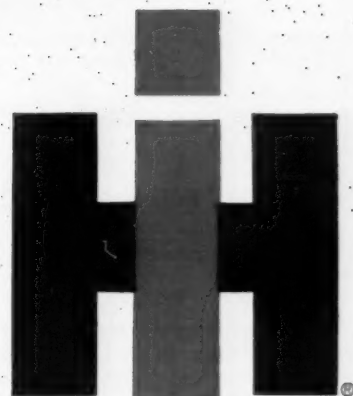
**Bonus-load INTERNATIONAL pickup trucks**  
*that give you more "go" with traditional six-cylinder engine economy.*



**INTERNATIONAL V-8 trucks** continue to bring you the newest in heavy-duty power and economy! Engines are specially matched to drive lines to pull *your* load on *your* operation at lowest cost. Metered-flow engine water jacket design evens engine temperatures. All-truck pistons and rings reduce oil consumption. Finish-honed replaceable exhaust valve guides and self-aligning tappets mean reduced down-time. The result? A dependable truck that gets the job done on schedule at *least* cost. Ratings to 65,000 lbs. GCW. See your **INTERNATIONAL** Truck Dealer for more information.

## cost least to own!

.....



INTERNATIONAL HARVESTER COMPANY, CHICAGO  
Motor Trucks • Crawler Tractors  
Construction Equipment • McCormick®  
Farm Equipment and Farmall® Tractors

# LONGER, MORE PROFITABLE ROLLER LIFE—THE RESULT OF CONTINUOUS IMPROVEMENT OF CATERPILLAR PARTS

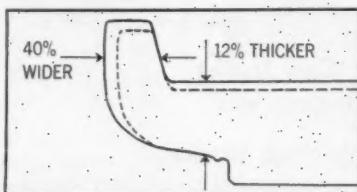
Cat "500" Track Rollers for D8s now have increased rim size for greater strength

A ceaseless search for ways to improve parts performance goes on at Caterpillar. Engineers are constantly striving to make each machine part do its job better, longer and more economically. The payoff for the customer is the steadily improving performance of Cat machines on the job.

New "500" Track Rollers for Cat D8 Tractors, for example, have been redesigned to better resist wear and breakage on the tough jobs. The roller rim has been thickened 12% in its critical area; the flange is 40% wider. The new design prevents roll-over and bending of the outer flange under severe side hill loads.

All Cat roller rims are designed so that treads and flanges may be economically rebuilt by automatic welding—a feature which results in big savings over the life of a tractor.

But that's only part of the story. Matchless Caterpillar quality starts with selection of steel. Extensive testing in Caterpillar metallurgical laboratories eliminates all but the finest quality steel before roller man-



ADDITIONAL MATERIAL on new D8 roller rim is shown by dotted line, above. Thicker, stronger flanges give greater wear resistance and a longer productive life.

ufacturing begins. Further tests (61 in all) are made at every stage of production.

Cat roller rims are made from forgings to insure maximum strength and uniformity. They are bored and given a controlled heat treatment producing thick, file-hard wear surfaces; the remainder is left tough to resist shock damage.

These rims are shrunk onto cast-iron hubs of high compressive

strength and then center welded. This prevents bore distortion and separation. Automatic precision machines finish-bore the roller assemblies. Careful inspection guarantees uniform quality.

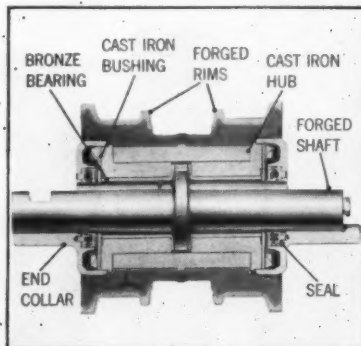
Similar Caterpillar quality is built into track roller bearings and shafts, too. A special bronze alloy is used in Cat bearings to support extra-heavy loads. A cast-iron bushing with high compressive strength encloses the bearing.

There is only one way to get maximum production—the production you paid for—from your equipment. Keep your big, yellow machines on the job by using only constantly improved genuine Cat parts. Your Caterpillar Dealer has full information about the new Cat "500" Track Rollers and all the other quality Caterpillar parts. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## SERVICE TIP

Ask your Caterpillar Dealer about the additional economies provided by 500-hour lubrication periods.



ROLLER CROSS SECTION of Cat "500" Track Roller shows rugged construction. Roller shafts are forged for controlled grain structure, maximum toughness and to permit superior heat treatment. Wear surfaces are hardened to a depth of at least 3/32", leaving a tough, strong core.



TOUGH JOBS, like the one pictured above, play havoc with any but the best track rollers. Here's what happened on an actual job: New Cat rollers were installed on the right side of a tractor; another brand of rollers on the left side. After 668 work hours, seals and bearings

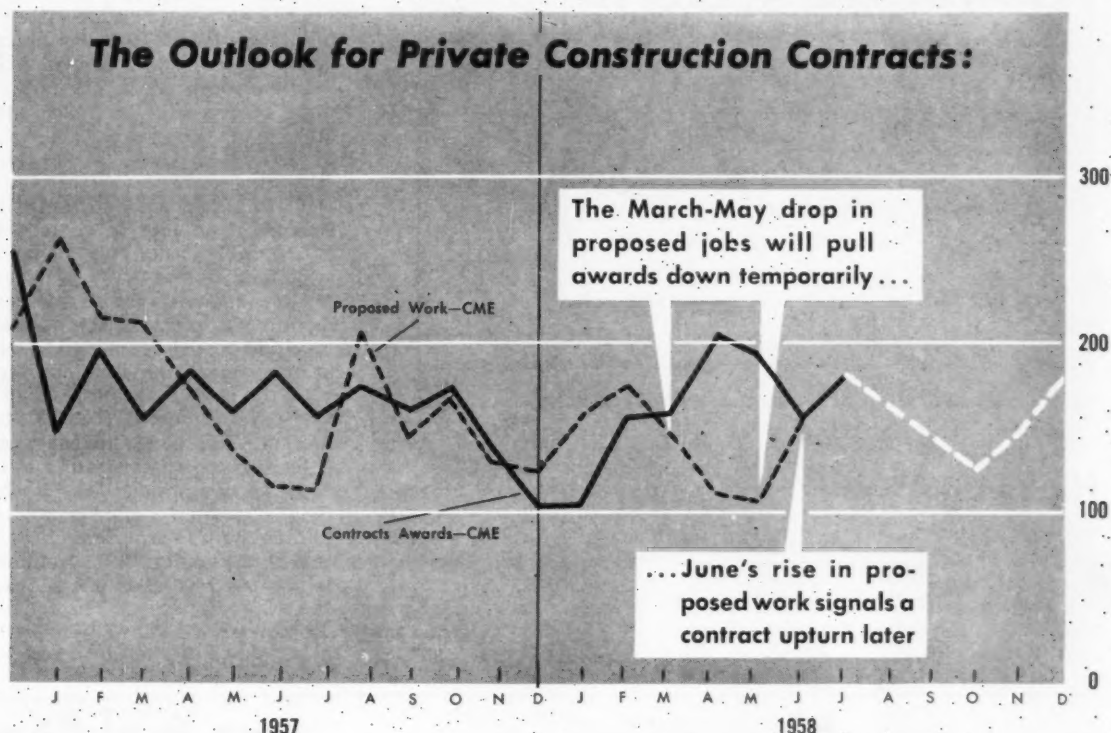
of two of the other brand rollers failed. They broke up and were lost from the roller shell. The Cat rollers showed normal wear and the 500-hour lubrication proved its value. Owners everywhere are proving that it pays to standardize on Caterpillar—equipment and parts.

# CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

# Construction Business...

Average weekly volume in millions of \$



CM&E's Forecast for 1959...

## Business Upturn Will Continue

THE SHARPEST UPTURN of contract awards in heavy construction history will lift 1958's contract total 8% higher than 1957. Construction Methods forecasts that the 1958 volume will hit \$19,480 million by the end of December.

On top of this rise, a 3% increase is forecast for 1959, bringing next year's total to \$20,150 million in new business for heavy construction contractors. This would make next year the second largest year in history and put 1958 in third position behind the all-time high in 1956.

A 10% rise in state and local public works contracts is the key to next year's gain. However, an upturn in private work also will contribute to the over-all rise.

New records are predicted for these types of public works: highways, bridges, waterworks and sewerage.

Brightest outlook is for private

"unclassified" and commercial building.

By contrast, the outlook for private industrial building remains weak because of the low volume of work entering the planning stage this year.

With most of the New York State Power Authority's Niagara project gone to contract this year, the earthwork-dams-waterways total in 1959 will slip below 1958's booming volume.

Public buildings other than housing are setting a fast pace in awards this year. A slight increase in volume is predicted for 1959.

Faring best next year will be contractors taking on heavy construction other than building. In addition to this year's 15% jump in volume, next year is expected to climb another 10%.

By contrast, building contractors may find slightly less work next year.

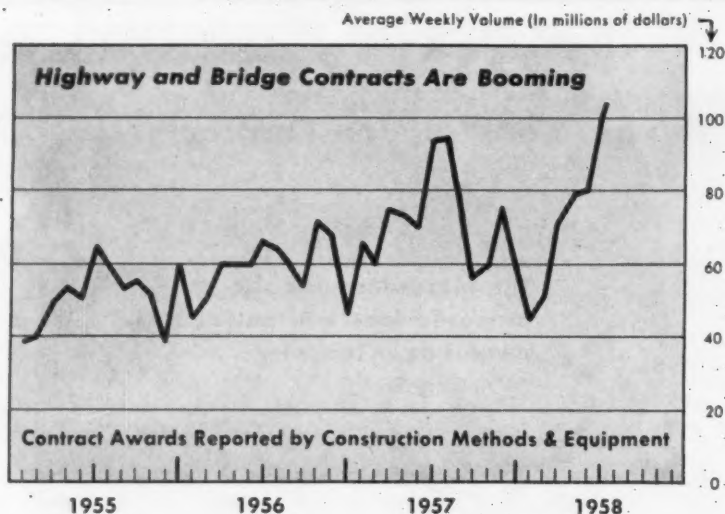
### Forecast: 1959 Contract Awards

As Reported by Construction Methods  
(In millions of dollars)

	1957 Actual	1958 Forecast*	1959 Forecast	Change Fore- cast %
<b>ALL HEAVY CONSTRUCTION OTHER THAN BUILDING</b>	\$17,986	\$19,480	\$20,150	+3
Waterworks	7,114	8,175	9,025	+10
Sewerage	369	400	450	+13
Bridges	556	600	650	+8
Highways	781	760	885	+16
Earthwork	2,964	3,500	4,000	+14
Waterways	969	975	800	-18
Unclassified, public	975	1,400	1,600	+14
Unclassified, private	500	540	640	+19
<b>BUILDINGS</b>	10,871	11,305	11,125	-2
Private				
Mass housing	3,041	3,800	4,000	+5
Commercial	1,754	1,780	1,925	+8
Industrial	3,081	1,900	1,500	-21
Public Buildings				
excl. housing	2,353	2,575	2,600	+1
Housing	642	1,250	1,100	-12

\* Based on actual 7 months total





## Highway Awards Hit Record Rate

CONTRACTORS signed up a record \$523 million in highway and bridge construction contracts during July, according to Construction Methods figures. This is a weekly average of \$105 million,

up 5% over the previous record set in June and 11% greater than the July, 1957 pace.

The fast comeback in highway and bridges awards, following the slump from September, 1957, to

February, 1958, was stimulated by the Highway Act of 1958 passed by Congress early in April. Additional funds, removing temporarily the limitation on withdrawals to highway trust fund receipts; lower state matching requirements for the extra "ABC" money and a December 1 deadline for using it, are provisions that greatly increased the impact of this year's highway legislation on 1958 contracting schedules.

Soaring contracts pull the 1958 contract total up to a record \$2,360 million as of July 31. This is a shade above 1957's previous all-time high for the first seven months. By contrast, the awards total had lagged 17% behind 1957 at the end of the first quarter.

Of the 1958 total to date, highway awards account for \$1,944 million. This is 3% higher than a year ago, compared with a 12% drop as of the end of March. Bridge awards account for \$416 million so far in 1958, and, though this is 7% under 1957's volume, it is a much smaller deficit than the 41% drop as of the end of March.

continued on page 49

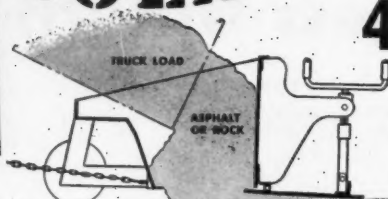


**NOW!**  
PAVING EQUIPMENT THAT  
IS ECONOMICAL TO BUY  
AND OPERATE!

# ROLA PAVER

**4 PAVER  
TYPES**

- BASE
- STANDARD
- COMBINATION
- \* TRENCH



## SPREADS BASE MATERIALS — UP TO 8" DEPTHS

(15 to 20 big truck loads per hour)

The big Rola Base Paver guarantees you a top quality job, with economical operating cost, for spreading base materials. No blading is necessary because of the Rola's quick operating screw adjustments that permit accurate depth control. Spreading up to 200 tons of crusher run base per hour is not unusual. Mixes that will discharge freely from the dump truck can be spread easily and speedily by the Rola Base Paver.

### SPREADS ASPHALTIC MIXES DOWN TO 1/4" DEPTHS

Street resurfacing is an economical and speedy operation with the Rola Paver. Many small municipalities rely on the Rola's efficiency for street maintenance to work within tight budgets. The Rola gives 25% compaction by its own weight on the initial spread. Quick repairs to damaged pavements is a smooth and easy operation with the Rola. Screed plate butane heaters are available as accessory equipment.

**\* PAVES TRENCHES AT SPEEDS UP TO 1,000 FEET PER HOUR,  
DEPENDING ON WORKING CONDITIONS**

**FREE:** Write today for full information on the economical and efficient ROLA PAVER!

Power Buggies • Telescoping and Economy Vibratory Screeds • Rola Pavers and Trench Boxes • Wood and Steel Tilt-up Hardware • Bull Floats • Hoppers • Elephant Trunks and Chutes • Tampers • Hand Carts

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BETTER EQUIPMENT FOR PLACING  
AND FINISHING CONCRETE

MANUFACTURED BY  
CREATIVE METALS CORP.  
exclusively for



**H. S. WATSON COMPANY**

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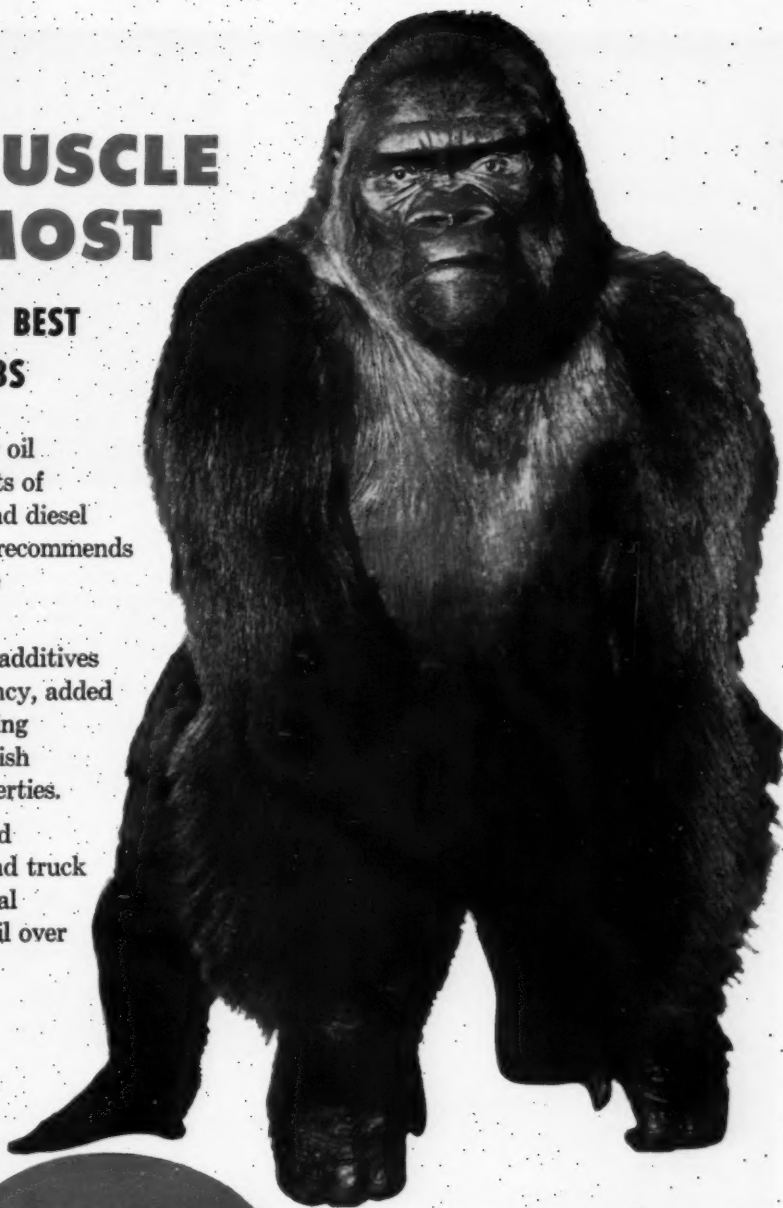
# WHERE MUSCLE COUNTS MOST

## AMOCO HDX OIL WORKS BEST FOR HEAVY-DUTY JOBS

Amoco HDX Oil is a heavy duty oil designed to meet the requirements of today's most exacting gasoline and diesel engines where the manufacturer recommends an oil conforming to API Service Designation "DG".

HDX insures clean engines. The additives used provide exceptional detergency, added stability, protection against bearing corrosion, high resistance to varnish formation and anti-foaming properties.

Satisfied customers including road contractors, coal strippers, bus and truck operators, attest to the exceptional record of this great heavy duty oil over many years of service.



# AMOCO HDX OIL

**When you want  
top performance, you want Amoco**

AMERICAN OIL COMPANY, 555 Fifth Ave., New York, N. Y.

### AMOCO ALSO PRESENTS...

Amoco Superior Diesel Oils, S-1, S-2 or S-3

Permalube Gear Oils

Perma-Flo Oils

Permalube All-Purpose Grease No. 158

Vesuvius "X" Gear Compounds



This Model TD Rear Dump Euclid offers a 10-speed Fuller 10-F-1220 Transmission.



A 5-speed Fuller 5-F-1220 Transmission gives rugged dependability to this Euclid R-18 Rear Dump Truck.



This Euclid S-12 Hydraulic Scraper is powered through a 5-speed Fuller 5-F-1220 Transmission.

## Geared by FULLER...

For heavy-duty earthmoving and mining equipment, leading manufacturers standardize on Fuller Transmissions... for these good reasons:

Fuller Transmissions are designed and built for long, trouble-free service under the most severe operating conditions. These heavy-duty transmissions provide smoother shifting,

longer engine life and the right gear ratios for the job... all performance features that add up to faster work cycles and greater profits for Fuller Transmission users.

...

From more than 100 models available for rubber-tired equipment, you'll find a Fuller Transmission de-

signed to do your job better... and at lower-than-ever operating cost.



FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich.

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.



Contracts for interstate highways are rising sharply this year with July awards setting a new high of \$195 million. Interstate highway awards, total some \$717 million for the first seven months of 1958, according to Bureau of Public Roads figures. As of June 30, construction was underway on \$1,740 million worth of interstate roads.

### SOME BIG CONTRACT AWARDS OF THE MONTH

**Arch Dam Constr. Co.**, 1024 Omaha National Bank, Omaha, Neb. (Peter Kiewit Sons Co., Morrison Knudsen Co., Inc., Mid-Valley Utilities Constructors, Inc., and Coker Constr. Co.) Construct Flaming Gorge Dam and power plant on Green River, Northern Utah, Colorado River Storage project approximately 45 miles north of Vernal in Dagget County, Utah. Bureau Reclamation, Dept. Interior, Denver Federal Center, Denver, Colo. \$29,602,497.

**Ebasco Services, Inc.**, 2 Rector St., New York 2, N. Y. 230,000-kw. Ocotillo power plant, near Tempe, Ariz. Arizona Pub. Service Co., 501 S. 3 St., Phoenix, Ariz. \$29,000,000.

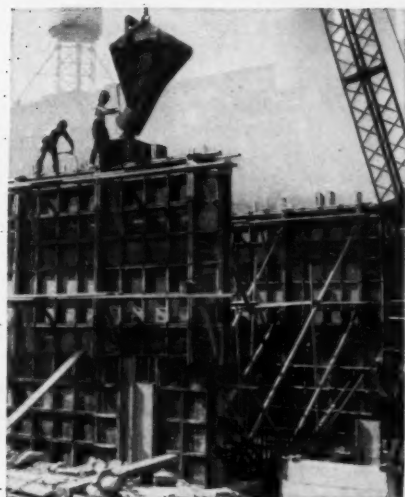
**Sumner Sollitt Co.**, 307 North Michigan Ave., Chicago Ill. Construct additional buildings and utilities at Veterans Administration N.P. Hospital, Downey, Ill. Veterans Administration Munitions Bldg., Wash., D. C. \$19,857,000.

**Massman Constr. Co.**, 3917 Broadway, Kansas City, Mo. Construct dam on Ohio River for Greenup Locks and Dam at Greenup, Kentucky. U. S. Eng., P. O. Box 2127, Huntington 18, W. Va. \$15,416,055.

**Bethlehem Steel Co.**, 25 Broadway, New York 4, N. Y. Furnishing and erecting 13,875 tons structural steel for second deck of George Washington Bridge, New York and New Jersey. Port of New York Authority, 111 Eighth Ave., New York, Zone 11, N. Y. \$13,610,298.

# CUT CONCRETING COSTS WITH Richmond FORMING METHODS

You can save time and money by making forms with your lumber and Richmond Form-Tys and Accessories.



Setting, pouring and stripping forms goes faster when you use the Richmond Snap-Ty Form System. With this system you

can build your own prefabricated panels. Form erection is reduced to an assembly procedure of the reusable low cost panels into durable forms suitable for continuous pours.

## RICHMOND SNAP-TYS FOR TYING LIGHT CONCRETE FORMWORK



1/2" or 1" BREAK SNAP-TY ASSEMBLY—3000 LB. OR 5000 LB. SAFE LOAD

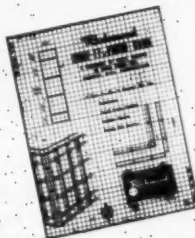
Richmond Snap-Tys are specifically designed for quick, easy and accurate erection of light foundation wall forms. With Richmond accessories they will give you a worthwhile saving from start to finish.

Spreader washers of ample size are precisely located to give the exact wall thickness. Head washers of special steel are securely held by a clean, well formed upset on each end of the tie to give positive bearing on the Tyholder, thus trans-

mitting the full strength of the Snap-Ty to the walers and preventing the possibility of costly breaks.

Break points are set back from the wall face to permit easy, clean stripping and prevent spalling of the concrete. The small tie holes and indentations of the washers, or cones if they are used, are easily pointed.

Richmond Snap-Tys are available with safe loads of 3,000 lbs. and 5,000 lbs.



TOP FORM SPREADER CLEAT

CORNER WASHER

OUTSIDE CORNER CLIP

PANEL STRAP

FORM BRACE

INSIDE CORNER STRAP

Some of the new accessories developed by Richmond for easy on-the-job assembly of prefabricated modular form panels.

Richmond does not make, sell or rent forms. Richmond sells Form-Tys and accessories and shows you how to make your own forms which can be used over and over. Profit by this fast, easy method for erecting light foundation walls. Send for your FREE copy of the Richmond Snap-Ty Form Book, containing complete diagrams and forming data. At the same time, ask for the current Richmond Handbook, which describes the full line of Richmond-engineered tying devices and accessories.

Write to: Richmond Screw Anchor Company, Inc.  
816-838 Liberty Ave., Brooklyn 8, N. Y.  
or 315 South Fourth St., St. Joseph, Mo.





# How the Planet Powered ups rock-dozing capacity both

**You don't have to jockey around**, or settle for "shirt-tail" loads, or get only part-capacity performance, when you concentrate the International TD-24's full rock-slamming power—right where you want it!

You don't waste time, and fuel, and tractor life with rear-end "sluing." You don't have to "paw dirt" and then wind-up "nibbling," instead of blading out full bites. You don't lose momentum and let the blade lose part of the load every time you steer. Not with TD-24 "follow-through"!

Exclusive International Planet Power steering makes the big difference.

## **"Dead-track drag" is eliminated**

You don't "half-kill" your power and traction to guide the TD-24, as you must with any king-size steering clutch tractor. Instead, Planet Power steering gives

you full-time "live" power on both tracks while turning—or while "equalizing" to steer accurately with offset loads. And the TD-24 handles the same big loads on turns or straightaways!

Besides, the TD-24 gives you cycle-speeding, on-the-go Hi-Lo shifting. You adjust speed to the load without stopping, going forward or in reverse. You speed up the shuttle-dozing cycle, take full-time advantage of the TD-24's full capacity!

The fingers of one hand control these TD-24 performance exclusives!

**Watch a TD-24 perform**—see why rock-movers call it the "rock-dozing special." Visualize how this load-control and bonus capacity make the TD-24 the ideal pusher, or outstanding for non-stop, big scraper pulling! See your International Construction Equipment Distributor for a demonstration.



Put one track in high range, the other in low—and the TD-24 pushes straight ahead, despite the tremendous offset load of benching-out unshot rock strata. P. C. Cooper, Blountsville, Tennessee, first rented this TD-24—then bought it because of its rock-doing performance!



An 8-unit TD-24 fleet owned by Rusciano and Sons Corp., replaced 8 big competitive crawlers—because TD-24 performance "measured up" to the toughness of this big road job. There was a considerable tonnage of granite and other rock to bulldoze—on the White Plains (N.Y.) Section of the Cross Westchester Expressway!

"With the TD-24, I can outwork any other machine where you have to push and turn with a big load," declares Operator Dan Olmstead, for Gibbons & Reed, Salt Lake City, Utah. "The TD-24 keeps the load moving, because you don't lose power braking a track." The TD-24 is spreading rock on a tough million-yard project—widening U. S. 40 in the Truckee River canyon near Reno.



**"24"**  
**ways!**



**International<sup>®</sup>**  
**Construction**  
**Equipment**

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.





Three Barber-Greene Tamping-Leveling Finishers easily pave over expansion joints jutting 2" high on the 5-mile, 6-lane Calumet Skyway Bridge. The contractor, Armen Avedisian, V.P., The American Asphalt Paving Company, Chicago, said, "All three Barber-Greenes did a perfect job, although they are 2, 18 and 19 years old."

## Paving over joints a problem?



As any paver passes over expansion joint, screed rides on joint. This does not interfere with compaction with Barber-Greene Finisher. Independent B-G Tamper compacts material right up to and away from obstruction.

Paving over jutting bridge expansion joints... over protruding manholes... over railroad and streetcar tracks... paving the faces of dams, at angles too steep for negotiating on foot... automobile race tracks, demanding extreme accuracy of surface contour... test tracks with steeply banked, negatively crowned curves... these and many other problems have been successfully solved by the Barber-Greene Tamping-Leveling Finisher for twenty years. The new Model 879-B is establishing even higher standards of performance. Write for information.

58-35-F



Expansion joints were 2" high. Shown here before pavement was laid by Barber-Greene Finishers.



Bumpometer shows smooth surface, before rolling, even at point where screed was when crawlers passed over joint.



Barber-Greene laid and compacted material right up to concrete curb.

# Barber-Greene

AURORA, ILLINOIS, U.S.A.



CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT



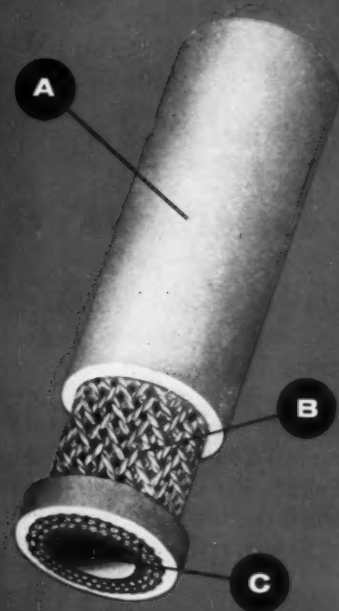
## Iron ball plummets 25 ft., slams Acme-Hamilton air hose 25 times!

Not the slightest sign of damage to cover, carcass or tube could be found after a 2-ton iron ball was repeatedly dropped on the same spot of this rugged air hose. This is actual proof that you can specify an air hose that will not fail when subjected to very severe service.

Why this hose is so rugged:

- (A) Abrasion resistant red cover is immune to cutting and abrasion.
- (B) Two plies of Hi-Tensile braided yarn add strength ... flexibility.
- (C) Neoprene tube resists heat and oil; won't flake or harden.

Ask your distributor for this air hose, or write Dept. 107.



# Acme Hamilton

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA • BOSTON • CHICAGO • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES  
MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE

**DRASTICALLY REDUCES DOWN-TIME LOSSES!**



**THE  
GENERAL  
TRUCK TIRE**

**The all-new WIDE BASE**

**GENERAL**

**with NYGEN®**

**L**OGGING

**C**ONSTRUCTION

**M**INING

You'll find less time chalked up to down-time once you've equipped your units with the new wide-base General LCM. Built sturdier and huskier with exclusive Nygen Cord and designed to give you consistent crawler-like traction and flotation, The General LCM rolls over the toughest job hazards to get every job done faster for more profit. See for yourself the biggest money-saver in the off-the-road field today... the all new wide-base General LCM.

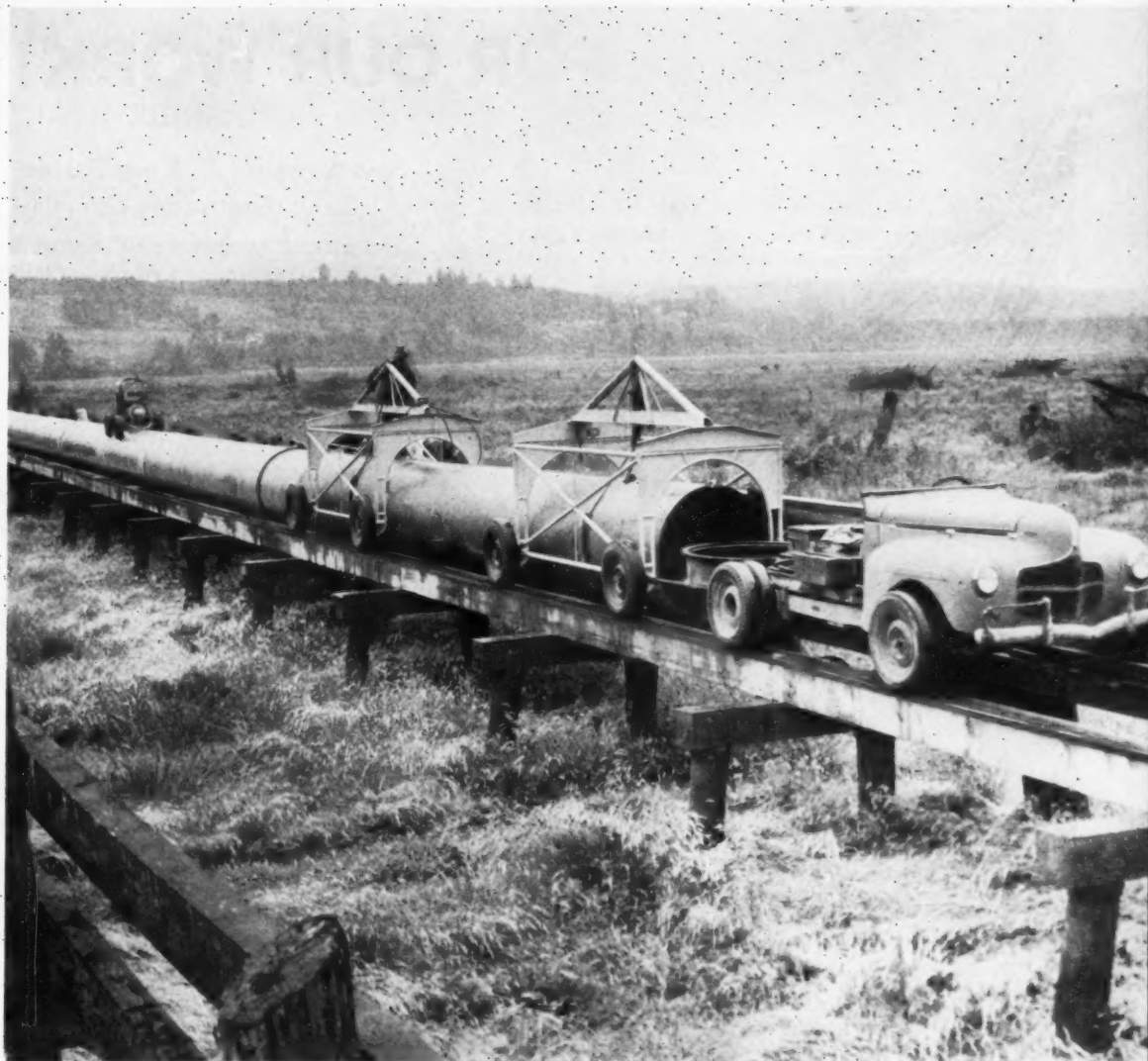
*Specify GENERALS on your new equipment*

- built with exclusive NYGEN cord for matchless strength
- designed to provide crawler-like flotation and traction
- minimum rolling resistance in all kinds of going
- precision engineered to reduce operating costs

**THE GENERAL TIRE & RUBBER COMPANY • AKRON, O.**



**PICTURE  
OF THE  
MONTH**

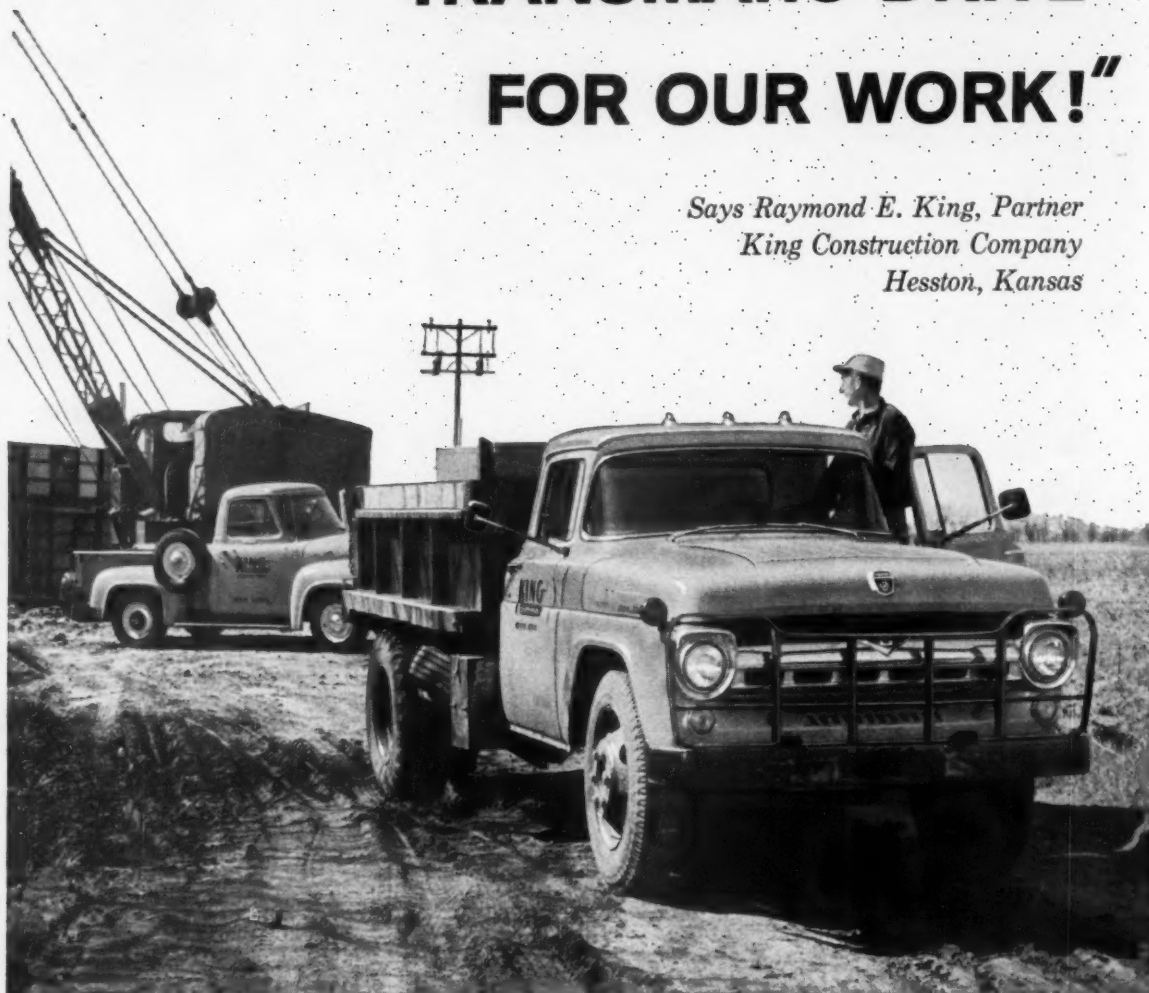


## Laying Pipe Across a Marsh

• Alton V. Phillips Co. of Seattle, Wash., built this unusual pipe-laying rig to place part of a new 48-in. water line for the city of Everett, Wash. Marshy ground made it necessary to put the pipe on a permanent timber trestle for about 8,800 ft of its total 95,500-ft length. It also posed an access problem that the contractor solved neatly by pushing 40-ft sections of pipe into position over the trestle with a stripped-down truck and two carriages mounted on automobile wheels. A pipe sling hooked up to a chain jack on each carriage raises and lowers the pipe sections.

# "YOU CAN'T BEAT FORD'S TRANSMATIC DRIVE FOR OUR WORK!"

*Says Raymond E. King, Partner  
King Construction Company  
Hesston, Kansas*



***"For off-the-road work and hauling  
out of sand and gravel pits our Ford  
two-tonner with fully automatic  
transmission sure handles the loads***

***"We've put 42,000 miles on our F-600 dump in  
the last 9 months and are very satisfied with it.  
Gas mileage is good and tire wear is reduced.  
Another big advantage of Transmatic Drive is that  
you don't tear up axles coming out of sand pits.***

Also, its torque converter multiplies engine torque to get loads started and prevents harmful engine lugging. To do our job with a truck not equipped with Transmatic Drive would mean buying a truck at least one size larger."

*Finance the easy one-stop way!*

*Ask about the new*

**FORD FLEET TRUCK  
FINANCE PLAN!**

**Bring extra savings  
to your business . . .  
make your next truck  
a FORD!**

Official registrations for 1957 show that *American business buys more Ford trucks than any other make.* There are many reasons for this popularity . . . many reasons for *you* to make your next truck a Ford!

To begin with, Ford offers a complete line of over 360 truck models, ranging from pickups to giant tandems. And there are Ford Dealers almost everywhere, ready to help you select the truck best suited for your individual job. They're ready with modern service facilities, trained mechanics and low-priced Ford parts to keep your trucks on the job, earning for you.

Ford trucks are your best buy! Ford's initial costs are *low* and resale value is traditionally high. The modern Ford Style-side pickups are the lowest-priced models available with full cab-wide body . . . giving you 23% more loadspace than any traditional pickup box.

Value-packed Ford Tilt Cab trucks offer exceptional payloads, maneuverability, service accessibility and driving ease. They're America's most popular tilt-cab line *by over two to one!*

Only Ford offers the economy of Short Stroke power in all engines, Six or V-8. And Ford's Heavy Duty V-8's offer new, advanced durability features. The modern Ford Six, available in Light and Medium Duty F- and P-Series trucks, is equipped with an economy carburetor that gives you up to 10% greater gas mileage. It's plenty peppy; too, with more horsepower per cubic inch than any other six in its class.

Ford's rugged cab and chassis construction means these new '58s are built to last. Every Ford has safety glass in every window. All this plus proof that Ford trucks last longer adds up to America's No. 1 truck value.

See your local Ford Dealer for the latest in '58 trucks or the best in A-1 used trucks.



**King Construction Company's Ford F-600** with 178-hp Heavy Duty V-8 engine is an all-around performer. Transmatic Drive enables driver to easily back truck into position.



**Carrying 5 to 6 yards of sand or rock**, this Ford dump truck hauls many loads daily from nearby production sites.

**FORD  
TRUCKS  
COST LESS**

**LESS TO OWN . . . LESS TO RUN  
. . . LAST LONGER, TOO!**



## ENGINEER'S FIELD REPORT

PRODUCT **RPM TRACTOR  
ROLLER LUBRICANT**  
FIRM **THOS. SCALZO CO.  
Seattle, Washington**

### Just 3 new track rollers in 4 years' tough service



**Granite Boulders** put a real strain on track rollers, but this Allis-Chalmers HD20, using RPM Tractor Roller Lubricant, A/C Type, has replaced only three rollers in four years of working under such punishing conditions. Tractor is operated by Thos. Scalzo

Co., specialists in earth-moving projects. RPM Tractor Roller Lubricant gives this operator an average life of 3,000 hours for track rollers on equipment in heavy-duty service. After 3,000 hours, rollers are switched to equipment in lighter duty service.



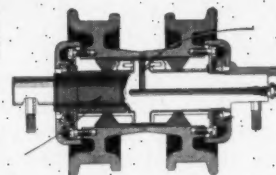
**Pulling a Grid Roller**, this Caterpillar D8 tractor is another of Scalzo Co.'s 14-tractor fleet—all of which use RPM Tractor Roller Lubricant. Says Vic Scalzo, "In spite of rough service, under all kinds of conditions, in 15 years we have never had to replace a track roller because of lubricant failure. Our on-the-job experience and our service records prove that RPM Tractor Roller Lubricant has been doing a good job for us since we started using it in 1941."



TRADEMARK "RPM" AND DESIGN  
REG. U. S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20  
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

### How RPM Tractor Roller Lubricants resist wear in toughest service



- Flow evenly to all bearing surfaces—retard rusting.
- Chemical agents maintain tough lubricating film and stability.
- Additive materials keep lubricant on bearings, resist leakage, helps form protective seal for bearings.
- Lubricants meet specifications of all tractor manufacturers.

**For More Information** about this or any other petroleum product, or the name of your nearest distributor, write or call any of the companies below.

STANDARD OIL COMPANY OF TEXAS, El Paso  
THE CALIFORNIA COMPANY, Denver 1, Colorado

# Construction News in Pictures...

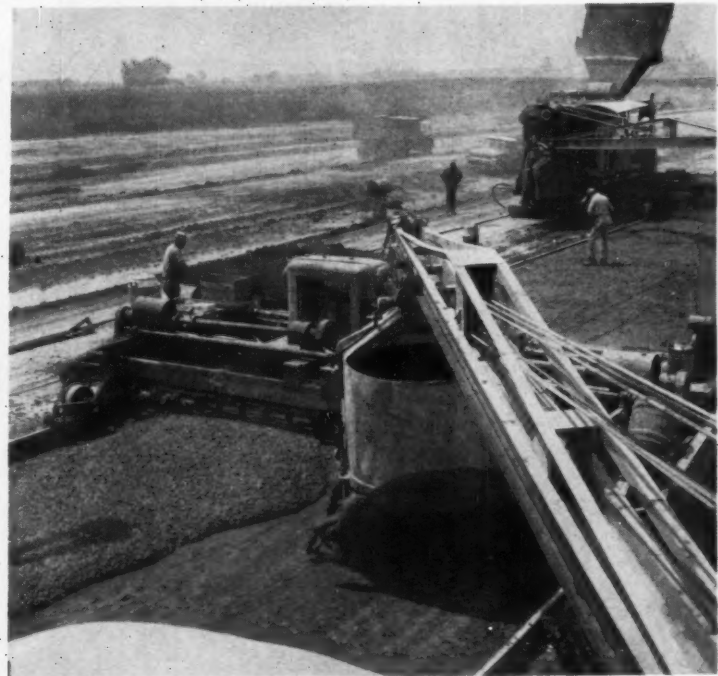
## Another Freeway

First concrete goes down for Ohio's 300-mi North-South Freeway between Conneaut on Lake Erie and Cincinnati. S. J. Groves & Sons Co. of Minneapolis, Minn., are placing the 10-in.-thick concrete slab, reinforced with welded wire fabric, on a 3-mi stretch of the four-lane highway. Northern half of the Freeway will be completed next year.



## Closing the Arch

Structural ironworkers of U.S. Steel's American Bridge Division lower a 74-ton section into place to close the arch of the Fort Pitt Bridge across the Monongahela River at Pittsburgh. The 50-ft center section of the 750-ft tied-arch span was floated directly below the center of the bridge on a barge and lifted into place by cranes.



## Digging Aggregate

Caldwell Engineers of Lenoir, N.C., are excavating 165,000 yd of rock for use as aggregate in construction of \$14-million Oliver Dam on the Chattahoochee River in Georgia. A pair of Northwest 2½-yd shovels dig the shot rock from the bed of the diverted river, and five International trucks haul 18-ton loads of the rock over a 1,000-ft haul road to the crushing plant.

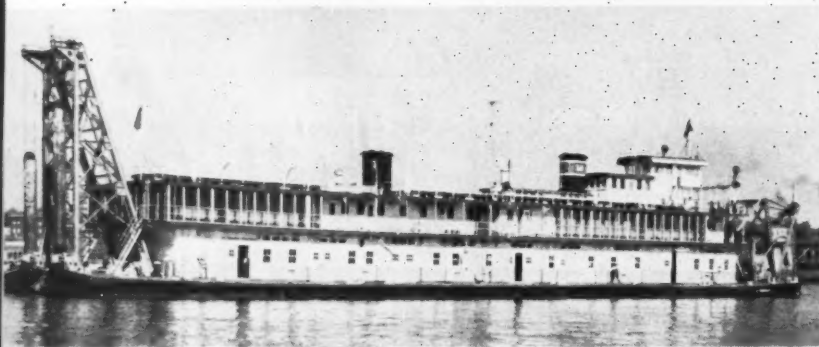
### Oil Pipeline

A crew coats and wraps a section of Jones & Laughlin electricweld line pipe for the 85-mi Cherokee Pipeline in Oklahoma. The 12¾-in. line will carry products of two refineries from Ponca City to Tulsa. Pipeline Service Co. of Seminole, Okla., is the contractor. Secrest Pipe Coating Co. of Tulsa handles coating and wrapping the line.



### Great Lakes Channels

A familiar sight on the Mississippi River for 20 years, the Corps of Engineers dredge Rock Island got a new assignment this summer. Last month it reported at Sault Ste. Marie, Mich., for duty in the Great Lakes. The Rock Island is 230 ft long and 48 ft wide. It can remove 12,000 cu yd of material per hr and has quarters for a crew of 64.



### Grandstand Steel

In a little more than eight months, American Bridge Division of U.S. Steel Corp. erected nearly 8,800 tons of steel for a new grandstand at Aqueduct race track on Long Island. The structure is 1,050 ft long and 112 ft high. It will seat 23,000. The new grandstand is part of a renovation program with an estimated total cost of \$32 million.

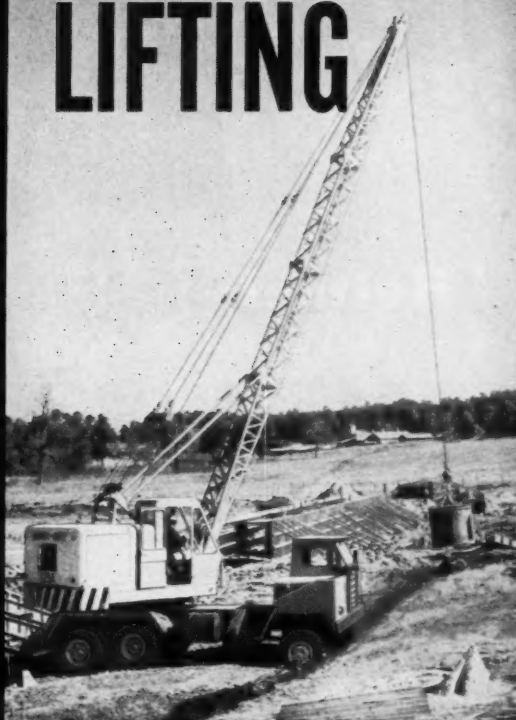




# DIGGING



# LIFTING



**"QUICK-WAY" is an all-around money-maker!**

Here's a "QUICK-WAY" 125-A owned by Montgomery Construction Company, San Antonio, Texas, doing a job in Huntsville. These photos show the Montgomery machine digging out a culvert and then pouring concrete on the same job.

The five-model "QUICK-WAY" truck shovel line has been especially engineered to offer companies, like Montgomery, all the small shovel versatility with all the big shovel features. The "QUICK-WAY" has been engineered to meet rugged heavy duty specifications with fewer moving parts. The power train is oversized, all shafts are splined for easy maintenance. Extra strength has been built in the machinery frame and gantry for greater lifting power.

"QUICK-WAY" 125-A shovels are available in 6/10 yd., 12½ ton truck mounts; 105-A in 5/10 yd., 10½ ton truck crane; 105-AC in 5/10 yd. crawler; 85-A in 4/10 yd., 8½ ton truck crane; and 85-AC in 4/10 yd. crawler.

"QUICK-WAY" is the only truck shovel offering an interchangeable, hydraulic grading, digging attachment—the new UTILO-SCOPE makes dozens of jobs possible with only a single attachment.

"QUICK-WAY" has more big shovel features...with more engineered attachments...to handle more kinds of jobs...with greater profits.

**For demonstrations and prices,  
see your "QUICK-WAY" distributor**

## "QUICK-WAY" TRUCK SHOVEL COMPANY

a  subsidiary

DENVER, COLORADO



"QUICK-WAY" Truck Shovel Co., 2401 E. 40th Ave., Denver 3, Colo.  
Please send detailed bulletin on the new "QUICK-WAY"  
UTILO-SCOPE hydraulic digging attachment.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

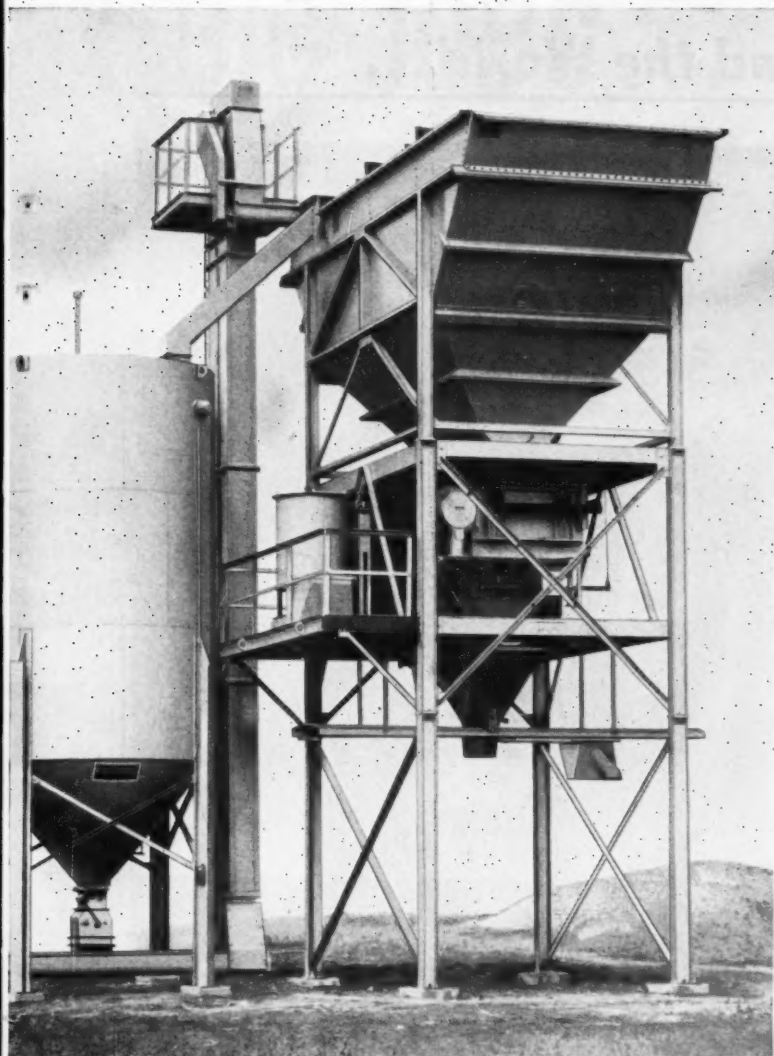
**This extra-portable new  
Heltzel Unitized Batching Plant  
sets up faster...combines dry  
batch and truck mix**

.....



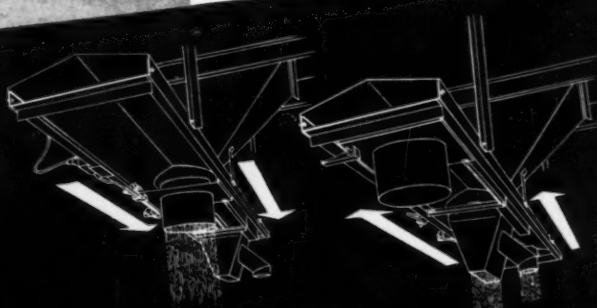
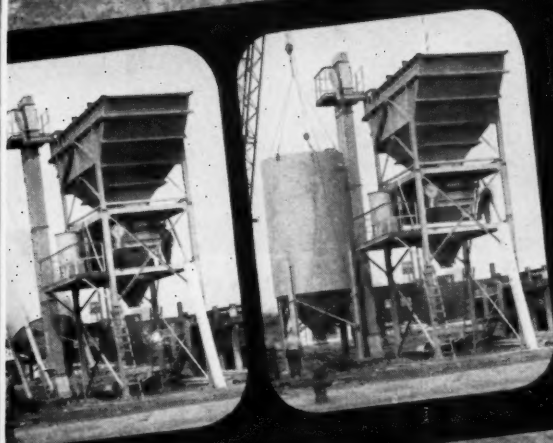
The eight photos in this strip give you the reason so many highway contractors are specifying Heltzel Unitized Batching Plants... speed and simplicity of set-up and dismantling.





**H**eltzel's new Unitized Plant goes together while you watch. It's the ultimate in portable batching equipment! The batching plant is factory assembled in three easy-to-handle sections that require only a minimum crew and standard crane equipment to set up. The factory assembled elevator comes as one complete unit that is easily set in place. The one-piece cement bin completes the basic assembly. For the first time an entire plant—batching section, storage and elevator sections—has been designed to give highway contractors a completely unitized, one-stop, truck mixer charging plant that is also well suited as a dry batch paving unit.

What's more, this is a Heltzel plant in every way. At no point in its design or construction did the engineers sacrifice Heltzel quality. In fact, because scales, batchers, etc., are factory assembled, it's exactly accurate and extremely fast—the finest engineered portable batching equipment developed to date. Make sure you have all the information on this time-saving packaged plant before you buy your next unit.



Heltzel's Traveling Batch Chute converts the plant from a ready-mix batch plant to a dry batch plant, or vice versa, in seconds ... another Heltzel innovation to further reduce construction costs.



**THE HELTZEL STEEL FORM AND IRON CO. WARREN, OHIO**



# Construction 'Round the World...

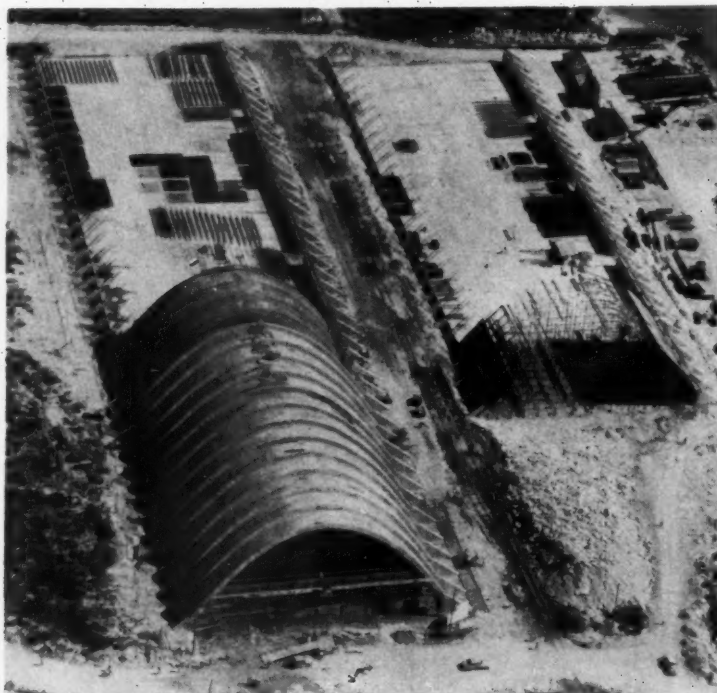
## In Cuba

Movable tubular steel scaffolding supports forms for reinforced concrete arched ribs that suspend thin-shelled parabola-shaped concrete roofs for two sugar warehouses in the Port of Matanzas. Scaffolding stands 66 ft high at the apex and handles four ribs at a time. When a set of four ribs is completed scaffolding is moved to the next set.



## In India

Within three months the \$150-million Bhakra Dam, now 400 ft high, will be high enough to impound the first 400,000 acre-ft of water in the Bhakra reservoir. A force of 12,000 men and 300 engineers are working to get this Five Year Plan project ready by 1960. Another 340 ft will take the dam to the top of the rock on both sides of spillway.



## In Switzerland

Concrete for wall blocks on the highest dam in the world, the 930-ft Grande Dixence, is hoisted to working level in 8½-yd loads and spread by bulldozers. Five vibrators mounted on each bulldozer compact the concrete. Water brought to the surface by compaction is drained off by a group of 80-gpm Flygt electric submersible pumps, which are made in Sweden.

# BIG JOBS... *prove Euclid "Twins"* *move the cheapest dirt*



C. J. Langenfelder & Son, Inc. used four "Twins" and other Euclid equipment on an 800,000 yd. plant site job in Maryland. The TS-24's self-loaded 18 bank yds. of dense clay in 2 minutes or less... made good cycle time on short-hauls with high rolling resistance.



Counting on "Twin" productive capacity, N. A. Degerstrom Const. Co. was low bidder of 23 contractors for grading U. S. Route 2 near Davenport, Wash. On one section two "Twins" moved 14,500 yds. in 31 working hours on the 5½ mile, close-to-a-million yard, job.



Vinnell Const. and McCammon & Wunderlich chose "Twins" for grading home sites in Beverly Hills, Calif. Six TS-24's averaged 1500 bank yds. per hour on 2500 ft. round trips with grades of 25% and more.



Hyde Const. Co. and Cook Const. Co., both of Jackson, Miss., had to move about 50,000 yds. a day to stay on schedule for their 10 million yd. job at Meridian Naval Air Base. A fleet of 9 "Twins" made the dirt fly... loaded 26 bank yds. of sand in 50 seconds.



List & Clark Construction Co., long-time Euclid owner, has added "Twins"... used 3 TS-24's on a 5.7 mile Interstate Highway project in Kansas involving more than 1¼ million yds. of excavation.

You get greater **R.O.I.** \* with Euclid "Twins"

25 "Twins" are part of a fleet totalling 120 Euclids that's helped Western Contracting Corp. keep their 24½ million yd. job at Oahe Dam ahead of schedule. Loaded with about 30 yds. they average over 18 mph for the 2.2 mile round trip.

42 "Twins" used on the Illinois Toll Road by these contractors: Western Contracting Corp.; L. F. Fleming; McCarthy, Mass & Dillon; Ralph Myers Contracting Corp.; W. M. Wyant Co.; L. G. Arnold & Griffith & Sons; C. K. G. Associates; James Peterson & Sons Co. and Kluck Construction Co.

Morrison-Knudsen Co. used two "Twins" on hard to handle clay core material at Nixon Rapids Dam. The "Twins" were push-loaded by "super" tractors for maximum production on this 4 million yd. project in western Montana.



# From BLAW-KNOX... One adjustable form for casting

- prestressed I-Beams
- Box Girders
- Building Beams

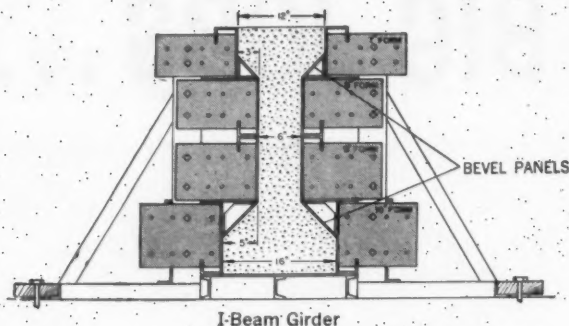
*in a wide range of sizes!*

Now the world leader in Steel Forms introduces an *Adjustable Steel Form* which will give prestress operators greater latitude than ever before in types and sizes of beams cast.

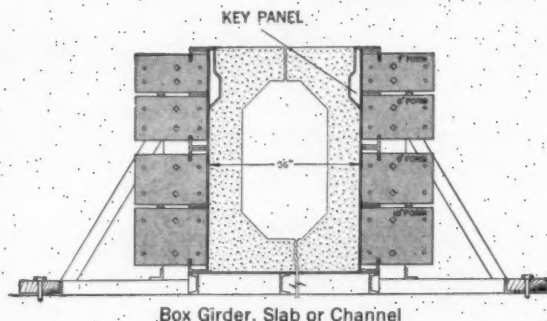
Key to the new adjustable form is its unit design. The side panels are constructed so that they can be varied horizontally and in vertical sequence to produce beams and girders of various cross sections. The panels are held in place on a separate frame by adjustable plates which are hole-punched to permit lateral adjustment. Simply by varying the alignment of the panels on the frame it is possible to cast box girders, I-beams and building beams in a wide range of sizes to suit the specific requirements of local construction. Special bevel panels are furnished to form I-beams or building beams where required.

## Cost less than fixed forms

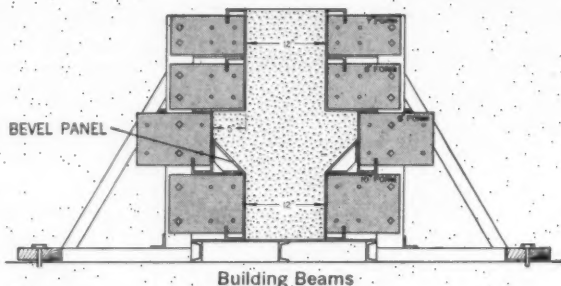
With the ability to cast so many different types of girders and beams, the initial investment in a versatile Blaw-Knox *Adjustable Prestressed Form* can be quickly realized. You can get the full story on this radically different form and how it can be a big business builder for you by contacting the Steel Forms Department now.



I-Beam Girder



Box Girder, Slab or Channel



Building Beams

**BLAW-KNOX**

## BLAW-KNOX COMPANY

Blaw-Knox Equipment Division • Steel Forms Department  
Pittsburgh 38, Pa.—Phone STerling 1-2700



# Medium and Small Jobs...

*prove versatility of Euclid "Twins" pays off*



Hopkins Const. Co. of Denver finished a 1.7 million yd. stripping contract in one-third the allotted time with 2 "Twins" that worked 20 hours a day six days a week and never missed a shift—an 87% availability record.



J. R. Bryant Contracting Co. chose the "Twin" for a close-quarter settling basin job near Pensacola, Fla. On a narrow dike the TS-24 makes a tight turn, dumps and pulls out of the sand... averages 8 trips per hour from a borrow pit 2,000' away where it self-loads.



Hassell Bros. Ltd. used two "Twins" for grading work at Vancouver Island airport. The TS-24's moved up to 7,000 yds. per ten hour shift, self-loading clay and gravel under adverse working conditions.



Working a 9 hour shift, a TS-24 moved 2500 yds. a day on a Pennsylvania road job of Bracken Construction Co. All-wheel drive and 518 h.p. enabled the "Euc" to high-ball from cut to fill and average less than 6 minutes for a complete cycle on the 2000 ft. round trip.



Two "Twins" strip overburden at a phosphate mine of J. R. Simplot Co. in Idaho. Working at an elevation of 10,000 ft. they self-load and haul about 300 pay yards of clay and shale an hour... climb 50 to 60% grades on the return trip.

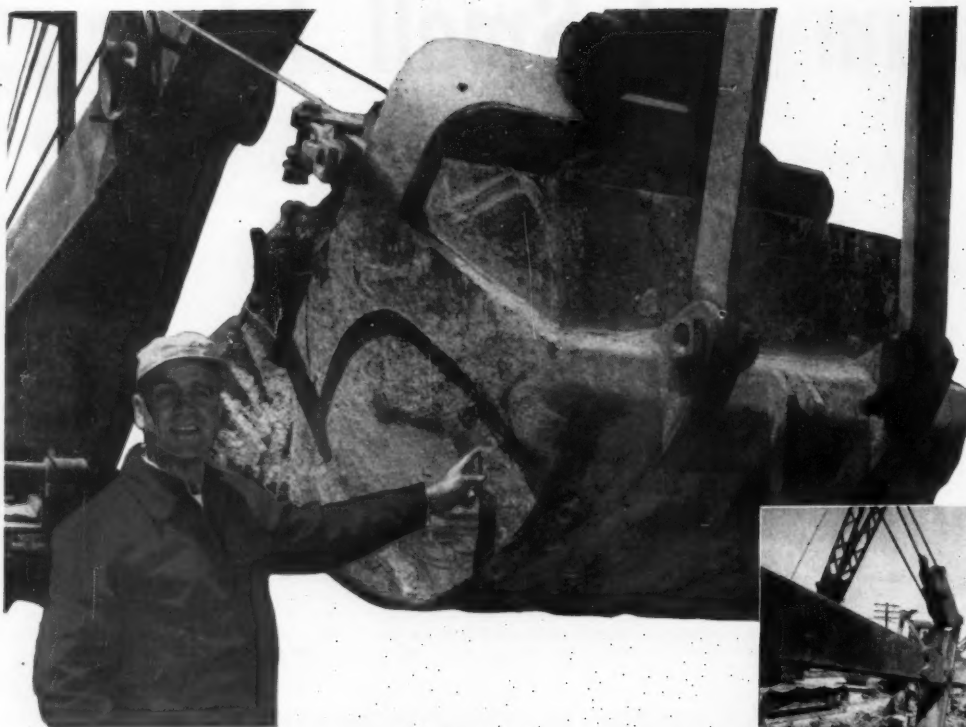
You get greater **R.O.I.** \* with Euclid "Twins"

R. L. Eatherly Const. Co. of Nashville, in pipeline work for years, recently bid and got a Tennessee road job. A TS-24, their first self-powered scraper, handled the complete 50,000 yd. job in 4 weeks.

B. D. McMillan's fleet of 3 "Twins" first worked on a highway job near Comanche, Texas and are now on a 5 mile channel improvement project of the U. S. Corps of Engineers near San Antonio. A TC-12 "Euc" crawler push-loads for high speed production.

R. H. Jones chose 2 "Twins" for a levee enlargement project in Mississippi. With all-wheel drive and big tires, these "Eucs" were the only scrapers that got on the levee and through the soft fill without help.





... reports Job Superintendent Kermit Strete,  
Cassidy Construction Company, Chicago, Illinois.

## "HOE BUCKET PERFORMANCE IS THE KEY to the entire project"

**ESCO** FASTBACK® Hoe Dippers Helped  
Slash Our Schedule 50% on a  
Four-Mile Sewer Project"



"Of all the buckets we have tried", states Superintendent Strete, "the *ESCO* FASTBACK Hoe Dipper is better designed. It delivers more yardage because the operator gets the 'feel' quicker and assumes the proper digging angle with the bucket lip."

"For example", Strete continues, "our 2-yard *ESCO* unit scooped up an actual 2½-yards every 60 seconds from trench 19 feet deep. It averaged 1200 yards per day working in 9 feet of coarse yellow clay on top of 10 feet of tight blue clay."

"In the five months we have been using the *ESCO* units, we have noted a definite reduction in work stoppage and downtime for maintenance. We have been using five *ESCO* FASTBACK Hoe Dippers on this job, and we intend to specify them on all future units."

*ESCO* FASTBACK Hoe Dippers can make your operation more profitable, too. See your *ESCO* dealer for details, or write direct.



### ELECTRIC STEEL FOUNDRY COMPANY

2149 N. W. 25TH AVE. • PORTLAND 10, OREGON  
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.  
Offices in Most Principal Cities  
ESCO INTERNATIONAL, NEW YORK, N. Y.  
IN CANADA ESCO LIMITED

# R.O.I.\*

## BIG JOB or Small Job . . . in contracting, mining and industrial work . . .

### *Productive Capacity of Euclid "Twin" Scrapers* **Provides Greatest \*RETURN ON INVESTMENT**

The earning power of Euclid TS-24 Scrapers has helped beat the profit squeeze on all kinds of work and on all sizes of jobs. With costs on the rise, obsolete or inefficient equipment doesn't help your competitive situation or your profit picture . . . can cost you jobs and money. To get your share of the bids — at prices that bring you a fair profit — you've got to increase productivity of men and machines without increasing costs. A lot of contractors have already found the "Twin" is by far the best answer to the problem.

It's no secret that equipment sales fell off considerably last year. Many contractors had idle equipment . . . contract awards were down . . . manufacturers' and dealer inventories were high . . . it was a "buyers" market. In the face of this declining market, deliveries of Euclid "Twin" Scrapers were up 226% over the previous year. The reason is quite simple . . . productive capacity and versatility that means a greater return on investment in spite of higher initial cost.

For example, a single engine 18 yd. scraper pushloaded by a "super" tractor will produce

about 120 yds. per 50 minute working hour on a 2000' haul under average conditions. A "Twin", self-loading under the same conditions, would average 170 yds. Use your own cost figures and you'll find that the return on capital investment for a 2000 hour work season is far greater with the "Twin".

And that's not the whole story either . . . not by a long way. Here's why: for small yardage, pioneering and clean-up work the TS-24 is self-loading and independent of other equipment . . . all-wheel drive lets the

"Twin" work under conditions that keep other scrapers idle and adds working days on every job. For the hurry-up, big production jobs where you're pressed for time and yardage, a pusher tractor for loading will boost production tremendously.

When you compete with contractors using "Twin" Scrapers you're bidding against all-wheel drive, more horsepower, more capacity more work-ability, and most important of all *more return on investment*. Can you afford to pass up the profit potential of the TS-24? See your Euclid dealer for facts and figures proof and a demonstration on your job.



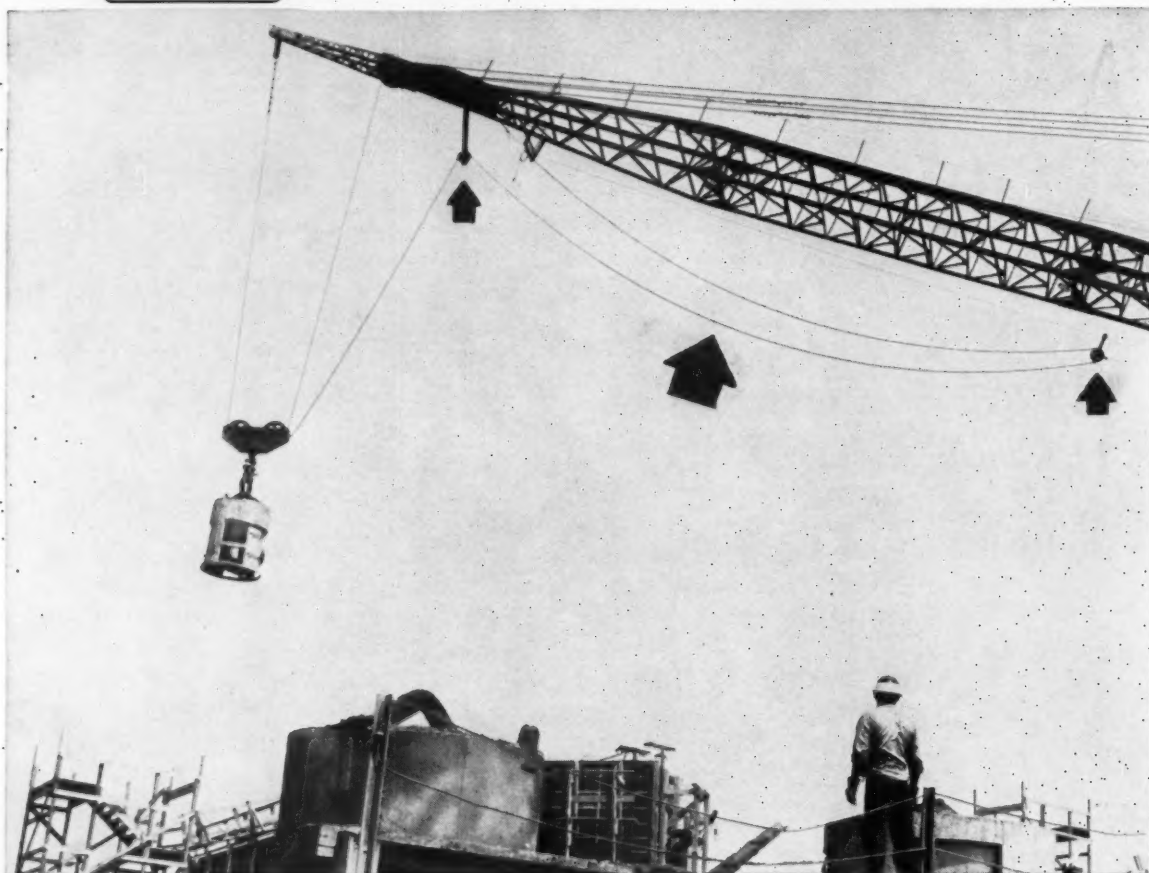
**Engineered to fit the job . . .**  
**Euclids are your best investment**



**EUCLID**  
Division of General Motors Corporation  
Cleveland 17, Ohio



**B.F. Goodrich**



## Steel claw grabs 12-ton bucket of concrete

*B.F. Goodrich hose is "jack of all trades" on St. Lawrence Seaway*

**Problem:** That crane swoops down on a 12-ton bucket of concrete, picks it up and swings it over to workmen high atop a dam being built on the St. Lawrence Seaway. The black line you see attached to the crane is a hose. It carries air under terrific pressure, used to open and shut crane hook as it grabs the bucket. One problem.

This continual tugging and bending would quickly ruin ordinary hose. With thousands of tons of concrete needed to build a dam, there's no time to wait while hose is replaced.

**What was done:** To avoid costly delays, the project manager wanted a hose that could take this abuse. The B.F. Goodrich distributor recommended B.F. Goodrich Type 50 air hose. This hose is built for rough treatment. It has a cover so rugged that even dragging over sharp rocks won't tear it. And a special reinforcement makes it so strong it can stand constant twisting and bending without breaking.

**Savings:** In use three months when the picture was taken, this B.F. Goodrich hose showed no sign of wear, was

expected to last at least six months more. This B.F. Goodrich hose is also used on dozens of other jobs on the Seaway—to supply air pressure to hundreds of pneumatic tools that drill, dig, vibrate; and also doubles as water hose, suction hose and cement grouting hose.

**Where to buy:** Your B.F. Goodrich distributor has exact specifications on the hose described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F. Goodrich makes for industry. B.F. Goodrich Industrial Products Co., Dept. M-410, Akron 18, Ohio.

# **B.F. Goodrich industrial products**

## Tomorrow's Workers

WHERE WILL THE CRAFTSMEN for tomorrow's construction jobs come from? All indications point to a shortage of skilled building and construction trades workers—that is, unless firm steps are taken now to entice younger men into our business.

Actually, many of the enticements are already there: healthful working conditions; the satisfaction of physical accomplishments, of turning plans into reality; the opportunity for variety in types of work and job location; the comradeship of the "construction fraternity;" and, of course, the not-inconsiderable rate of pay.

Those already working in construction know that these benefits are real. But the advantages must be explained to outsiders who think construction work a dirty job—to those who, if left to their own devices, would seek employment elsewhere.

This is one place where the contractor's help is needed. A simple step is to offer guidance to high school guidance counselors. Explaining the rewarding future that our expanding contracting industry can hold should do much to persuade them to funnel ambitious young graduates into our field.

An even more beneficial step is to participate in apprentice training programs. For this is the start of the pipeline that will feed us skilled workmen, increased productivity, and better workmanship in the future.

According to the U. S. Department of Labor, the number of registered construction apprentices now is 112,000. This is 17% more than the number six years ago. But the Department forecasts that by the end of the next six years we will require 24% more skilled craftsmen than we have now. Furthermore, most trades are losing more journeymen from the ranks than they are gaining by apprentice completions. If this continues, you're liable to find yourself having to pay more for poorer and slower work.

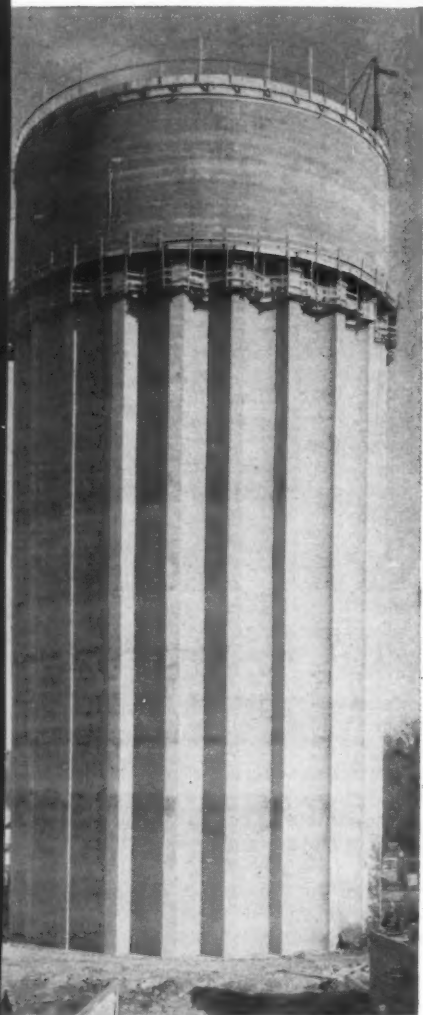
In addition to upping the supply of skilled workers, participation with organized labor in joint apprentice programs has other benefits. Working together intelligently to carry out the program, representatives of management and labor generally find each other reasonable people. When this reasonableness and mutual respect is carried over to wage contract negotiations, both sides can benefit.

And is the training worthwhile for the apprentice as well as the contractor? In Florida, of 23 apprentices graduated from a program in 1946, 15 are now superintendents and the rest are foremen. And a California survey indicates that 30% of the graduate apprentices are in supervisory positions within three to five years after graduation.

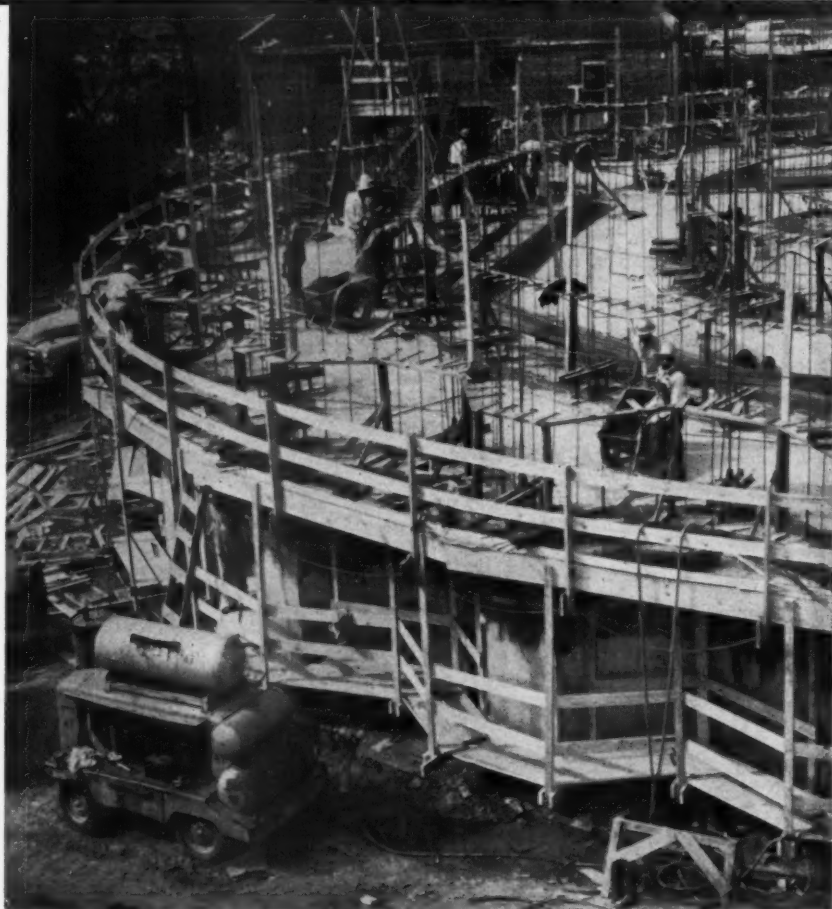
Progressive contractors have educational and training interests beyond the apprentice level. In Ohio, for example, they have organized a school for advanced training of their supervisory personnel (see page 124).

And thus the art and the science and the well-being of the contracting industry is advanced. For, in the final analysis, we depend on men. And if we cannot continue to attract and help train the intelligent, ambitious, hard-working man at all levels, we will be in serious trouble.

*Slip-form construction of what will be the largest prestressed concrete water tank in existence cuts labor and material over normal methods by a third.*



**REALLY HOLDS WATER**—Tank stands 35 ft high, and it is 98½ ft in dia.



**RINGS WITHIN RINGS**—Substructure consists of three concentric 8-in.-thick concrete ring walls raised simultaneously by slip-form method. Inner rings are simple cylinders with

## Slip Forms Raise

By J. J. CLOSNER  
Vice President, The Preload Co., Inc.  
New York, N. Y.

THEY NOT ONLY like to build things big in Texas—they like to see big things built differently.

In keeping with that Texas tradition we recently designed and helped build a 2,000,000-gal prestressed concrete water tank in Tyler that is unusual in several respects. The tank not only is the largest of its kind in existence, but building it required some rather unusual construction techniques.

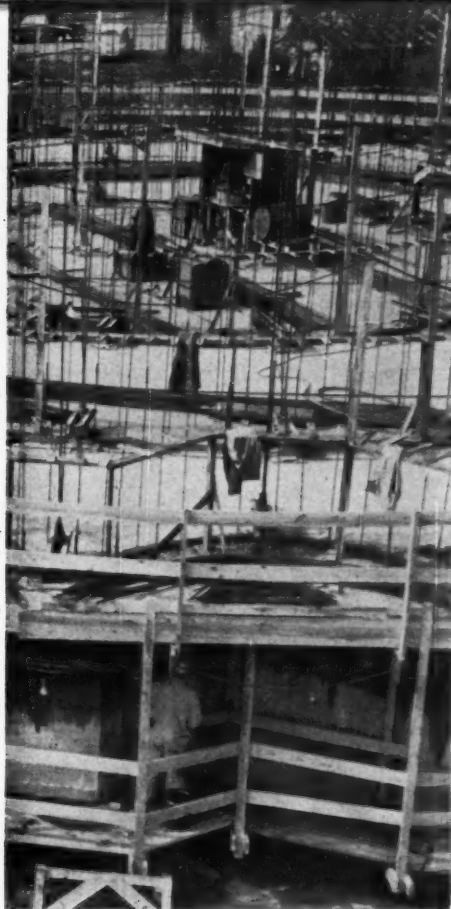
We designed the tank of prestressed concrete to provide a low-cost structure that readily would withstand pressures exerted by tank contents. Prestressed concrete also figured to reduce the cost of the structure 11% over steel construction. Slip-form placing of concrete reduced material

and manpower requirements to a fraction of what they might have been with timber forms and scaffolding. Both techniques helped cut estimated construction time for Whittle Contracting Co. of Dallas by at least a third.

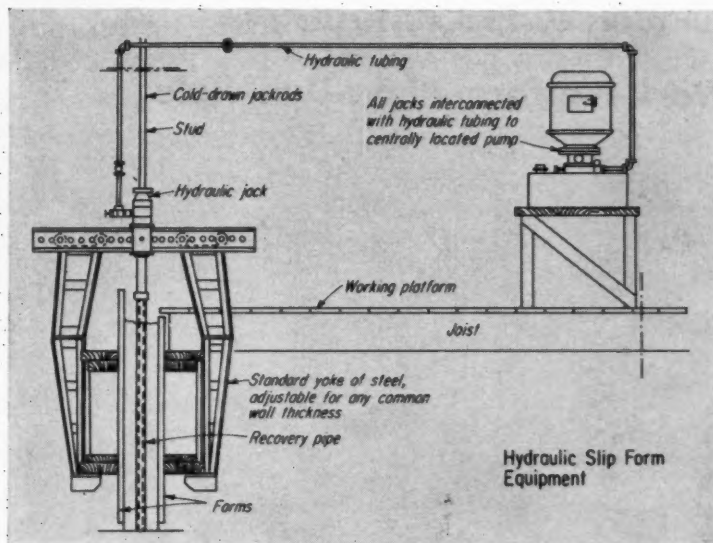
The tank has a 98½-ft inside dia and is 35 ft high. Its substructure stands 160 ft high, bringing the overall height to 195 ft. The substructure consists of three concentric concrete ring walls. The inner two rings are simple cylinders; the outer ring is fluted. Center-line radii of the two inner rings are 18 ft 9 in. and 35 ft 2 in. respectively, and the shortest distance from the center of the substructure to the fluted ring is 51 ft 8 in. All three walls are 8 in. thick.

A reinforced concrete foundation slab 4 ft 3 in. thick supports the rings. This slab required 1,300 yd of five-bag concrete and





radii 18 ft 9 in. and 35 ft 2 in.; fluted outside ring has radius of 51 ft 8 in.



**SLIP FORM EQUIPMENT**—Pump pushes hydraulic fluid through network of pipe set on tank perimeter and into series of hydraulic jacks that operate the slipforms.

**FORM-SUPPORTING YOKE**—Workmen place steel yoke over form section. A hydraulic jack climbs a steel jacking rod pulling up the form-supporting yokes.



## Big Prestressed Tank

98,700 lb of reinforcing steel. The contractor poured this continuously in 27 hr.

### Slip Form Construction

On the base slab, Whittle poured the ring walls with the slip-form technique. Form faces were made of 1x4-in. tongue-and-groove sheathing 45 in. long. Walers were 2x6-in. segments cut to the proper radius. Rod trusses, supported by walers, were installed between the concentric wall forms. Whittle laid flooring over these spans to provide a working platform for storing reinforcing rods, pouring concrete, supporting hydraulic pumps and the like. This flooring also served later as a bottom form for the floor of the tank itself.

Wall reinforcing consisted of ½-in. bars placed horizontally and vertically at 12-in. intervals

in the center of each of the rings. Vertical bars were held in place by jigs on the forms, with the first course tied to foundation dowels and succeeding courses tied to previously placed rods. Horizontal bars were tied to the vertical bars as forms were raised.

The contractor supported slip forms with a number of steel yokes. Each was secured to a hydraulic jack that climbed a 1-in. jack rod. This rod projected vertically upwards from the poured concrete. Legs of the yokes took up the lateral pressure exerted on forms by the concrete.

Lifting force of the jacks was transmitted to the forms by "shoes" on the yokes under the lower walers of the forms. Each jack contained two sets of jaws. When hydraulic pressure was on the lower jaws grasped the rod and forms were pushed upward

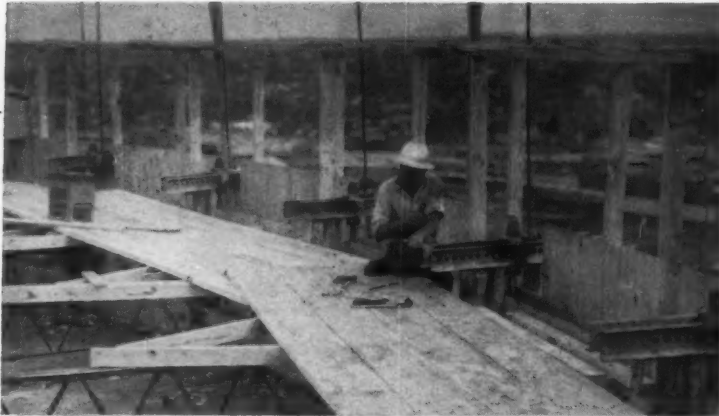
against this grip. When hydraulic pressure was off, the upper jaws took hold of the rod and a spring raised the lower jaw to ready it for another lift.

Jacks were connected to a central hydraulic pumping station by a closed system of ½-in. piping. At periodic intervals the hydraulic pump was operated, causing jacks to climb the rods and thus move the forms up to receive additional concrete.

The hydraulic system, as compared to manual jacking, cut manpower requirements in half. Manual jacking requires individual adjustment of each jack. The hydraulic system requires only pump operation plus periodic inspection of each jack and occasional valve adjustments to equalize any unevenness in form level.

A total of 101 yokes and jacks did the work. A 2-hp, 220-v. 3-

## Work Platform Plays Dual Role



**FORMING**—Workman sets planking over web ribbed joists to make up work platform that will ride up with slip form assembly. Platform also will serve as bottom form for tank.



**REINFORCING**—Iron workers set curved reinforcing bars over work platform before concrete is poured for tank's bottom slab. Slip forms, however, continue to build tank walls.

phase motor powered each of the three hydraulic pumps. One pump was a standby.

Jacks moved upward in 1-in. increments. The interval between rises depended on such factors as growing strength of concrete, weather conditions, mixer capacity, distribution of concrete, reinforcing, and time required to work concrete into the forms. Whittle's average rise on the job was 9 in. per hr, or one rise approximately every 6 min. Bad weather, mostly rain, slowed progress to some extent.

As the wall progressed, additional sections were added to the jack rods. The contractor tapped the ends of the rods so they could be joined together with  $\frac{3}{4}$ -in. studs. A  $3\frac{1}{2}$ -ft tube with a  $1\frac{1}{2}$ -

in. dia was suspended into the wall from each jack. Jackrods passed upward through these tubes. Thus, as the concrete hardened, a hole was formed around the tubes. And since the tubes lifted as the jacks were raised, openings were formed in the concrete around the jack rods. When rings were completed, jack-rods were recovered. The sections were dismantled as they were withdrawn from the hole.

The contractor poured continuously with the exception of a one-day stop after forms had been raised approximately  $8\frac{1}{2}$  ft. The stop enabled him to hang scaffolding around the outer ring to carry workmen hand finishing the outer tank ring with wood floats.

Concrete was mixed at ground level and discharged into a 1-yd bucket that was hoisted mechanically to hoppers on the working platform. Buggies carried the concrete to the forms where it was worked into place and consolidated by puddling or rodding. Spaces for doorways were blanked out in the three rings as work progressed.

Work procedure changed when the working platform reached the position where it was to serve as a form for the tank's bottom slab. At that point workmen drove  $\frac{5}{8}$ -in. bars 18 in. long and pointed at one end through the forms and into the concrete just below the upper walers.

These rods were spaced 2 ft apart to take the entire load of slab and forms. Pumps, yokes, and oil pipes then were dismantled, jack rods removed, and the platform cleared.

Whittle completed the substructure nine days after the one-day interruption. The work required 3,010 yd of  $6\frac{1}{2}$ -bag concrete. Whittle placed this concrete in 363 pouring hours, working two 12-hr shifts with a crew consisting of one foreman, one carpenter, three iron workers, three jack and pump operators, two hoist operators, two boom operators, three finishers, and 16 laborers on each shift.

### Building the Tank

As soon as substructure work was completed, Whittle erected side forms for the 2-ft-thick tank bottom and placed 84,000 lb of reinforcing steel. Then began a 48-hr continuous pour of 738 yd of  $6\frac{1}{2}$ -bag concrete to make a monolithic slab free of contraction or expansion joints. Appropriate openings were provided for pipe connections and for an access shaft to the dome.

A continuous rubber waterstop with a dumbbell-shaped cross-section was cast into the floor at the center line of the tank wall so that it would extend into the base of the wall. Two rubber pads, each  $\frac{5}{8} \times 1\frac{1}{2}$  in., placed on each side of the waterstop, were cemented to the floor slab. Spaces between the rubber pads and the edges of the wall were filled in with removable rubber strips of the same thickness as the pads. This allowed tank and floor to

## Prestressing Tank Finishes Job



**TEMPORARY ANCHOR**—Workman sets temporary anchor against tank wall to hold wire when prestressing must be interrupted.



**STRINGING WIRE**—Wire winding machine strings high tensile steel strands around tank with a force of 150 kips per vertical foot.

deform independently when subjected to various loadings; shrinkage, and plastic flow.

Only 78 yokes and jacks were required to construct the tank wall. The contractor provided working platforms and guard rails adjacent to the wall and access tower.

Walls were reinforced in a manner similar to the support walls. In addition, Whittle built vertical prestressing units into the wall as the tank was constructed. These consisted of  $\frac{7}{8}$ -in. steel bars encased in metal sleeves and fitted with 4x5½-in. base plates. Bars were spaced at 4-ft intervals. Bearing plates were secured to the bars at the top of the wall and the units were stressed by jacking to provide vertical prestress that would counteract the effects of vertical bending and temperature stresses. Rods were grouted after the stressing.

The tank was built in two 12-hr shifts with a crew of one foreman, two carpenters, two iron workers, two jack and pump operators, two hoist operators, two boom operators, and one finisher on each shift.

A  $\frac{5}{8}$ -in. rubber pad cemented to the top of the tank wall separated wall and dome and allowed them to deform independently. Bar trusses suspended between the temporary columns and the tank wall supported dome forms sheeted with 1x6-in. S4S lumber. The dome required 9,100 sq ft of wire mesh along with 7,880 lb of reinforcing steel. The dome

ranges in thickness from 8 in. at the outer dia to 4 in. at the center and spans the tank.

### Prestressing

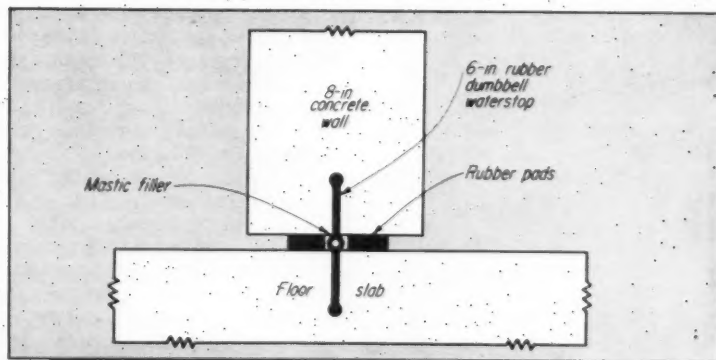
We (Preload) prestressed the concrete by winding tank wall and dome with some 23,000 lb of high tensile wire drawn to a diameter of 0.141 in. from an original diameter of 0.162 in. Prestressing the wall offset the pressure of the tank contents. Prestressing the dome withstands the lateral dead and live loads of the dome itself. The wire imparted an initial force of 140 kips per vertical foot at the base of the wall and decreased gradually to a force of 17.3 kips per ft at the top of the wall.

Wire was wound with a wire-winding machine suspended down the sides of the tank wall from a

carriage that rode the outer edge of the dome. This applied the circumferential prestressing at 140,000 psi. The carriage was anchored to the center of the dome by radial cables, and the entire mechanism was self propelled.

The rubber pads on which tank wall and dome rest deformed as the wire was wound around the tank and thus prevented the development of large bending moments in the wall. Before Preload developed this method of minimizing base restraint, thicker walls and/or additional vertical prestressing usually was required. Prestressing force on the dome was 245 kips.

We applied about an inch of pneumatic mortar over the exterior of the tank and dome edge—or ring—to bond the wire and to protect it from the weather.



**JOINTS**—Rubber pads set between tank wall and its floor slab on either side of a dumbbell-shaped waterstop permit walls to deform independently of bottom slab.



*High frequency butt welder makes steel pipeline joints in the trench in 1½ min. Hydraulic apparatus aligns pipe and applies pressure during welding process. Unit is completely automatic.*



**UNIT IS MOBILE**—Housed in an Army surplus trailer, the high frequency automatic butt welder moves along pipeline, welding joints either on the ground or in the trench.

## Pipeline Welder Completes

AN AUTOMATIC UNIT that fusion-welds steel pipe sections in the trench looks like a good bet for pipeline contractors. Crews of Consolidated Edison Co. of New York City turn out four pipeline joints an hour with the new high frequency butt welder. They average only one weld per hour with conventional hand welding equipment.

The actual butt-welding operation takes only 1½ min. Remainder of the time is taken up with getting the rig in position at the joint and aligning the pipe sections.

Housed in a trailer, the equipment can be moved from joint to joint along the pipeline. Inside the trailer, a diesel engine powers the 100-kw, single-phase, 1,000-cps generator that supplies high frequency current to the welding unit. A boom suspended

from the trailer lowers the welding unit—output transformer and work coils—along with the hydraulic aligning and clamping devices into the trench.

After adjoining pipe sections have been aligned properly, the hydraulic clamps are tightened to force the butt edges of the pipe sections together. The clamps apply a horizontal pressure against the two pipe ends of from 2,000 to 4,000 psi, depending on wall thickness of the pipe.

The work coils heat the butt edges of the pipe until they are white hot. The combination of pressure and high temperature fuses the pipe sections together. During the welding process, the hydraulic apparatus twists the pipe sections slightly to help bind them together.

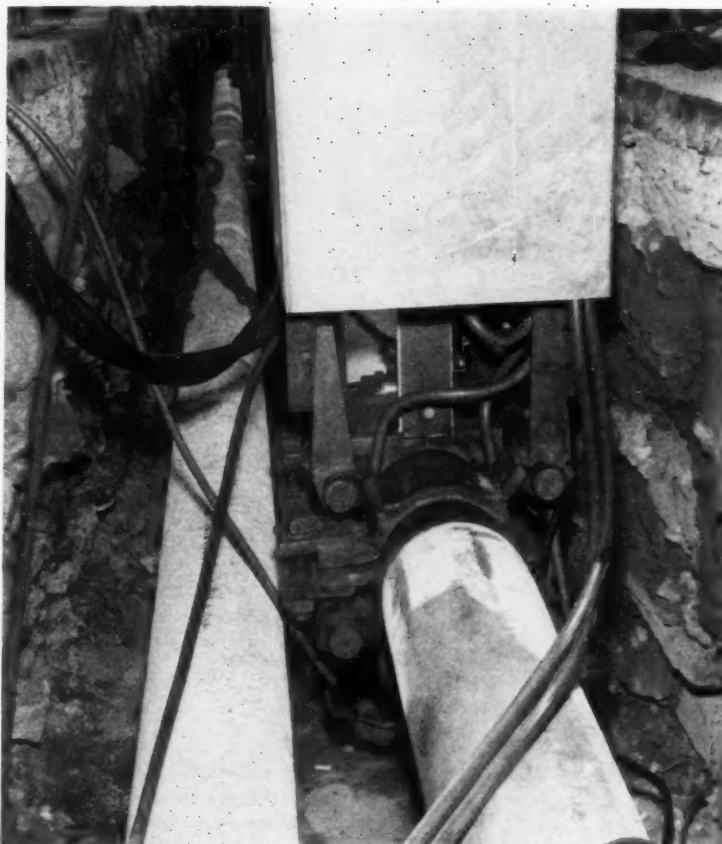
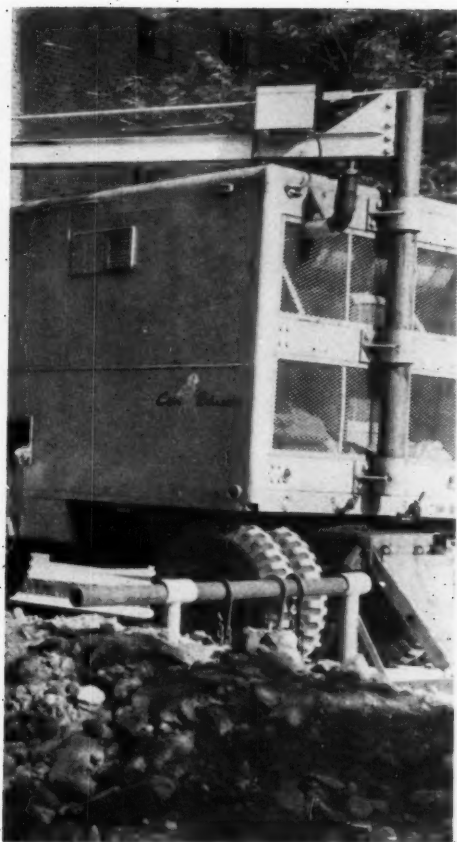
The operation is completely automatic; a device mounted on

the control panel inside the trailer shuts off the current when the sections are completely fused. The control panel includes meters, timers, capacitors, and protective devices that regulate the current to match the requirements of the job.

Consolidated Edison developed the hydraulic apparatus that aligns and clamps the pipe sections. The induction heating equipment is manufactured by New Rochelle Tool Corp. of New Rochelle, N. Y., who adapted it from a fusion-welding outfit for thin tubular sections.

Con Ed has tested the unit in the field for several months. So far they have been well satisfied with results: no mechanical failures after several hundred welds.

In field operations, Con Ed found that most of the time is consumed in moving the rig from



**CLAMPS HOLD PIPE**—Hydraulic apparatus aligns pipe sections and forces edges together. Pressure combined with high temperature at butt edges fusion-welds pipe sections.

## Four Joints an Hour

joint to joint and setting up the welding unit in the trench. Production depends largely on how well the lineup has been prepared for the actual welding operation.

A faster method may be feasible in some cases: pulling the pipe through a stationary setup on a special lineup table. As many as 10 welds per hour could be done in this way. Con Ed has a job coming up on Staten Island with long straight stretches of line that should be ideally suited to this method. They hope to use the new rig to good advantage there.

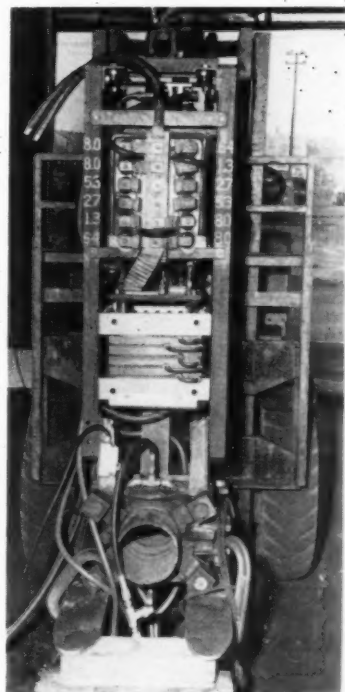
Since no additional material is added at the joint in the fusion process, the internal diameter of the pipe remains full size. The joint is ideal for pipelines because no obstructions protrude to create turbulence in fluid flow. Argon gas, sprayed on the weld

area while the sections are being joined, creates a nearly inert pocket that keeps air away from the butt edges and prevents matter from sticking to weld area.

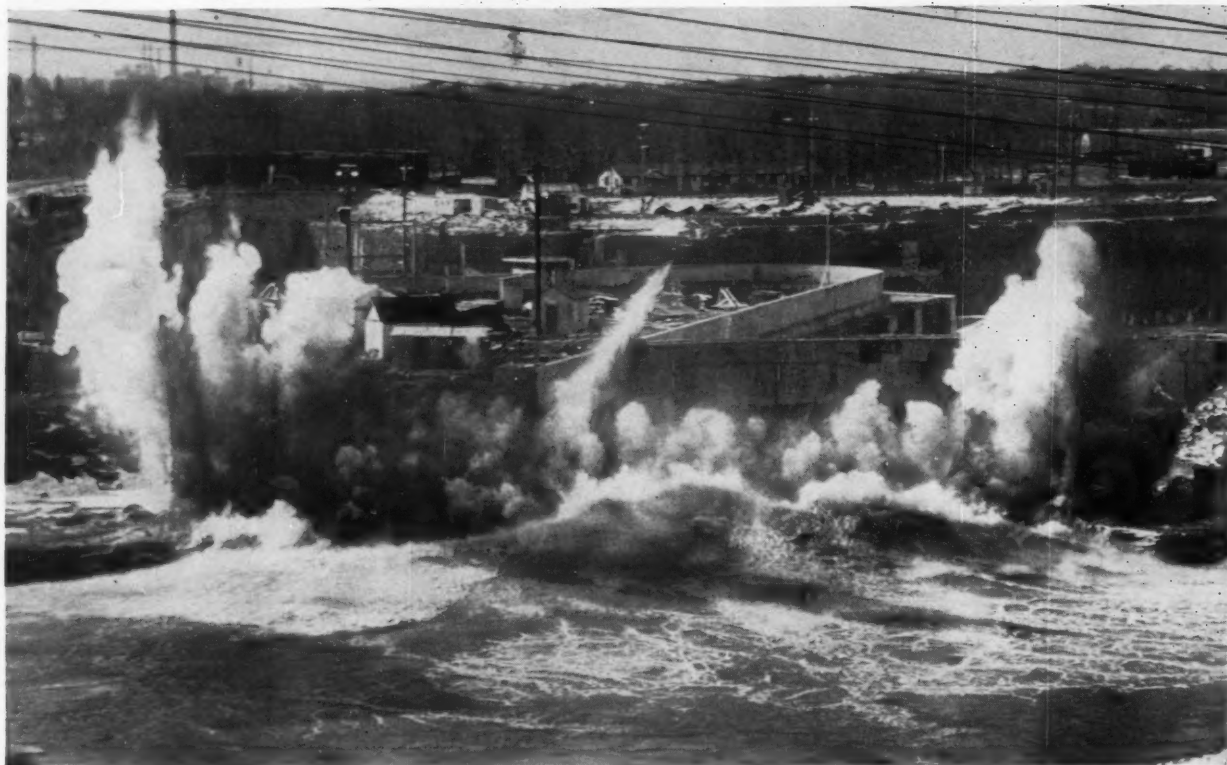
Soundness of the weld has been tested under different conditions of temperature, pressure, duration and intensity of current, and other varying factors. Samples from 200 welds have undergone a series of tests to prove out the equipment.

The maximum size of pipe that the current model can handle is 14 in. Work is now under way on a larger unit that will be able to take care of pipe up to 32 in. The new model should be ready in about a year.

Operation of the automatic unit does not require any skill in hand welding. Only a short training period is necessary to familiarize the crew with the unit.



**COILS HEAT EDGES**—Output transformer feeds high frequency current.



**TAMED EXPLOSION**—Surface bubbles are part of an Air Curtain that shielded nearby structure from this blast of six tons of explosive that shattered a 25,000-ton rock plug.

## Underwater Air Fence Confines

TWO NEW TECHNIQUES for underwater blasting, developed in Canada, are achieving some remarkable results for contractors on both sides of the border.



**INVENTOR**—Adolph LaPrairie holds one of the first Air Cushion cans he devised.

In the first technique, called "Air Curtain" blasting, an underwater perforated air line releases a "curtain" of bubbles around the blast area. This barrier of air cushions the shock wave (water hammer) that an underwater explosion always causes. It allows a contractor to blast much closer to a structure, or even right under a ship, without damaging it.

On its first large scale use, an Air Curtain that cost \$5,000 to set up, saved the Ontario Hydro-Electric Power Commission over \$1 million. Hydro blasted out a 25,000-ton rock plug in a powerhouse forebay with six tons of explosive, leaving the head gate structure—only 85 ft away—unscathed.

In the second technique, called "Air Cushion" blasting, long metal cans filled with air are placed in drilled holes, closely spaced around the blasting area. This creates a plane of weakness in

the rock that effectively minimizes overbreak. It also cushions vibrations and seismic shock waves.

McNamara Construction Co. and Russell Construction, Ltd., both of Toronto, Canada, were the first contractors to profit from the idea. They tried it on their job of deepening the Welland Canal for the St. Lawrence Seaway.

The technique allowed them to drill and blast right up to the old concrete canal walls to form a clean shear cut. Without the Air Cushion, they could not have blasted any closer than 14 ft from the wall. That would have left a wide berm at the edge of the canal bottom—a serious obstruction to ship movements.

On the same job Russell set up several Air Curtains to protect lock gates and other structures. They also set up curtains around their drill barges. This saved time because they were





## Blast Shock

able to set off a blast on the canal bottom directly under the barges without moving them.

Both techniques were invented by Adolph LaPrairie of the Explosives Division of Canadian Industries Limited. He proposed the use of the Air Curtain for the Ontario Hydro job. This first trial took place in April 1954. The method was patented in 1955 and has been used successfully on several subsequent jobs.

LaPrairie came up with the Air Cushion idea last fall for the Welland Canal project. This technique is being patented also.

C.I.L. holds the patents for the techniques but has made both processes available to contractors who wished to use them. They request however that a contractor consult them before trying the techniques. Their advice helps him get better results than he would by trial and error. And the consultation aids further development of the process by add-

ing to C.I.L.'s growing collection of job data.

### Air Curtain

The Air Curtain made its construction debut on a tricky blasting job on the Canadian side of Niagara Falls.

Ontario Hydro was building (with its own forces) a second Sir Adam Beck Generating Station beside the No. 1 plant at Queenston, Ont. They had built the forebay of the new plant and had almost completed a canal that would connect it to the forebay of the old plant.

The final task was to remove a rock plug in the canal. This plug was 48 ft deep, 100 ft wide, and 50 ft from front to back. Blasting it was a problem because the main head gate of the No. 1 plant was only 85 ft away.

The first plan proposed was to drain the forebays and blast out the plug in the dry, because airborne and seismic shockwaves are less troublesome than those transmitted through water. But this would have meant shutting down the plant for about 10 days, and Hydro was committed to supply power continuously to its customers. To substitute for the plant during a shutdown period they would have had to buy power from the American side of the river.

LaPrairie's proposal of the Air Cushion did the job without shutting down the plant and without causing the slightest damage to it. By keeping the plant in continuous operation, Hydro saved the \$1.1 million it would have cost to buy outside power.

The Air Curtain had never been tried before and Hydro construction men and research men proceeded cautiously to make sure there would be no damage to the plant. They conducted a thorough series of tests and trial runs before they risked the big blast.

They made the first test in a salvaged transformer tank filled with water, by exploding blasting caps at one end of the tank and measuring the hydraulic shock wave at the other end with high-speed electric gages. In between they laid six brass air tubes with 0.04-in. holes drilled at 1-in. intervals to produce the Air Curtain.

From the test they found that 15 cu. ft of air per min for each foot of pipe reduced the pressure of the shock wave to about 1/10th

of its normal value. This was convincing enough evidence for them to go ahead with the main installation.

The arranged the Curtain pipes in three straight sections to form an enclosed area in front of the plug on the head gate side. One section was 50 ft in front of the plug and parallel to the bank. The other two sections came out from the bank at 45 deg to meet it.

To get the required volume of air in the curtain, Hydro laid three parallel pipes around the perimeter to provide a total effective length of 320 ft. Holes were 0.055 in. in dia and were at 1-in. intervals in two rows. The whole pipe assembly was supported and lowered into place on the canal bottom on steel trusses.

With the main equipment in place, Hydro made several trial runs. They set off small charges in the plug, ranging from 45 to 120 lb of explosive. Without the curtain, a blast of 105 lb resulted in a pressure of 55 psi at the head gate. With the curtain operating, the same blast produced no effect at the plant.

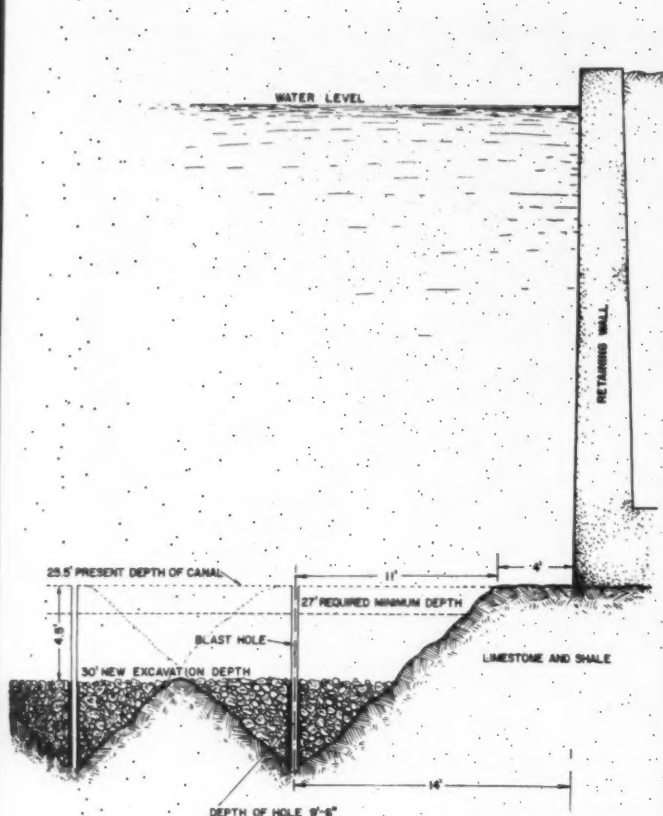
To remove the plug in one blast, Hydro planned a series of charges with delays of 25 to 75 milliseconds between them. It occurred to Hydro engineers that the first shock might collapse the curtain of bubbles and leave it ineffective against the succeeding waves.

So they made one final test—a small-scale series of delays that simulated the sequence for the main blast. The pressure gages clearly showed that the Air Curtain remained effective for each delay.

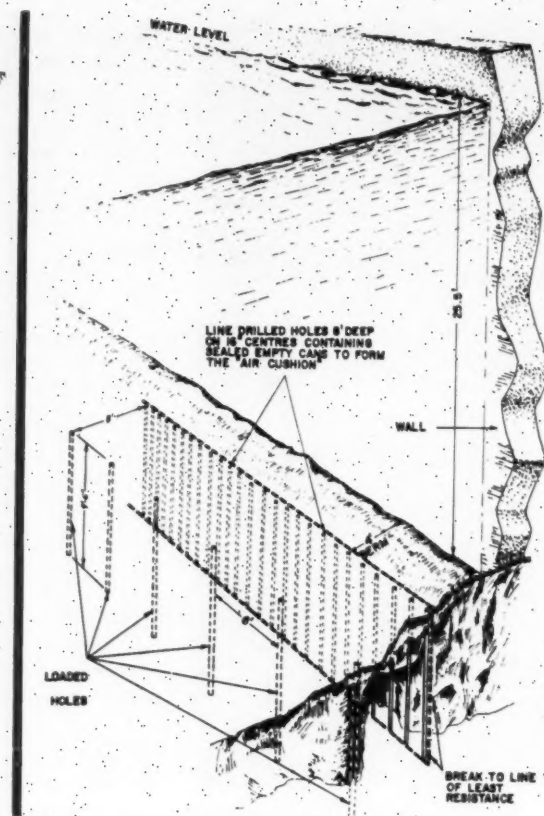
So Hydro went ahead with the plan to remove the plug in one blast. They used a total of 12,200 lb of powder but limited each group of the delay series to 1,000 lb. This limit was determined by the expected rock-borne shock, because the air curtain would stop only the water-borne shock.

They used C.I.L.'s Nitrope and Nitrox blasting agents. Both are of the nitro carbo-nitrate type, packed in welded steel cans. These relatively insensitive explosives prevented the first of the delay series from setting off later charges.

To prevent undue displacement of the blasted rock into the old forebay, Hydro raised the level of the water to within 5 ft of the top of the rock surface. They



**WITHOUT AIR CUSHION**—With loaded holes 14 ft from wall, each blast forms a cone-shaped hole. Result: a wide berm at wall.



**WITH AIR CUSHION**—Cushion forms trim line, protects wall. Blast holes move closer to wall. Result: shear cut and small berm.

#### UNDERWATER AIR FENCE CONFINES BLAST SHOCK... continued

also built a rock fill across the interconnecting canal on the downstream side to prevent scattering of the blasted material.

The blast was completely successful. Hydraulic shock at the head gate never exceeded 15 psi. And the explosion thoroughly scattered the rock but left it in place for easy removal.

#### Air Cushion

McNamara Construction Co. was the first outfit to try the Air Cushion technique. They had a contract to deepen a section of the Welland Ship Canal from 23 to 27 ft to meet the requirements of the St. Lawrence Seaway. (The Welland Canal by-passes the Niagara Falls area.)

They were hampered at the start of the job by specifications of the Welland Canal authorities that prevented them from blasting within 14 ft of the canal walls, and limited them to 13 lb of explosive per period of delay.

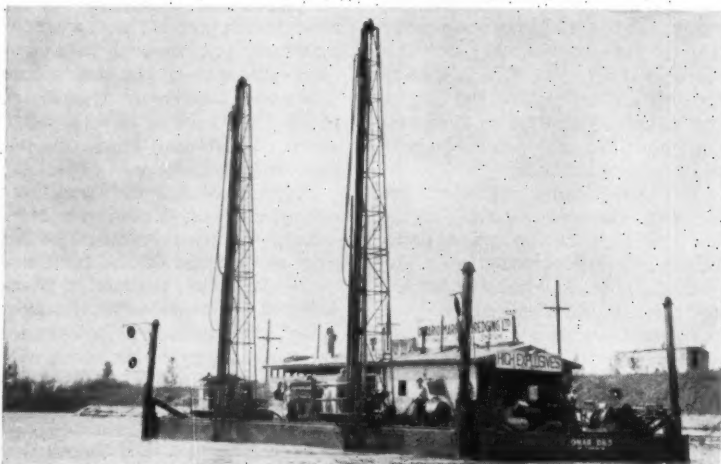
Under these restrictions McNamara could not make a clean cut up to the sides of the canal.

They were leaving a 14-ft berm that would have required expensive close-spaced drilling to remove completely.

An Air Cushion solved the problem. In the initial set-up Mc-

Namara drilled a line of 6-in. holes only 9 ft from the wall. These holes were 8 ft deep and spaced at 16-in. intervals.

In each hole they placed two air-tight cans, each 3 ft long and 3 in. in dia. They made the cans from standard 28-gage "down



**DRILLING**—Barge with two drill rigs prepares blast holes on bottom of Welland Canal. Canal is being deepened from 24 to 27 ft to form part of St. Lawrence Seaway system.

spouting" normally used to carry water off roof gutters. They capped and soldered the ends of the cans to keep the water out.

To hold the cans under water they taped three wings of spring steel to the bottom of each. These springs, like the barbs of an arrow, allowed the can to go into the hole, but when it tried to float up they spread against the sides of the hole and held it down.

The completed cushion provided a compressible wall of air that proved to be the "line of weakness" toward which the main force of the blast moved. Without this line, the force would have moved upward, forming a group of cone-shaped holes. With the Air Cushion the blast sheared out a straight-walled cut.

McNamara made seismic tests to find what effect the Air Cushion had on shock waves and vibration. They found that the vibration at the 9-ft distance with the air cushion was about the same as they had been getting at 21 ft from the wall without it.

After seeing this evidence the Canal authorities let McNamara move in their nearest blast holes to 9 ft from the wall and set the Air Cushion holes flush against the wall. This eliminated the berm completely.

Russell Construction Co., working on a different section of the canal, also adopted the Air Cushion technique. Their procedure was similar, except that they used a different size of can—5 ft long and 2 in. in dia.

The difference in the diameters of the holes was governed by the size of the respective blast holes. C.I.L. recommends using as big a diameter as possible for the air cushion holes, but they also point out that it is most convenient to make the Air Cushion holes the same size as the blast holes so that the same drill rig can do both.

The original technique—the Air Curtain—also played an important role in the Welland Canal job. Russell set up Air Curtains to protect lock gates and to shield their drill barges.

The procedure on the barge was simple. A compressor on each barge fed a series of air pipes that passed under the bottom of the barge. These pipes insulated the bottom of the barge from the blast with a pad of air bubbles that absorbed much of the hydraulic shock from the blast. In most cases the contractor was able to both drill and blast single holes without moving the barge.

#### Other Applications

Ontario Hydro has accumulated the most experience of any builder with the Air Curtain process. In addition to the first Niagara experiment they have tried it successfully on a number of similar power plant jobs.

One unusual application took place in the harbor at Halifax, N. S., Canada, where the Foundation Co. of Canada had a contract to build a concrete dock.

They had built two reinforced concrete cribs for the pier on

land and floated them out into position. When they tried to repeat the operation with a third section, they ran into bad luck. The big crib tipped and sank, just 43 ft away from the two already in place. This presented a ticklish removal problem.

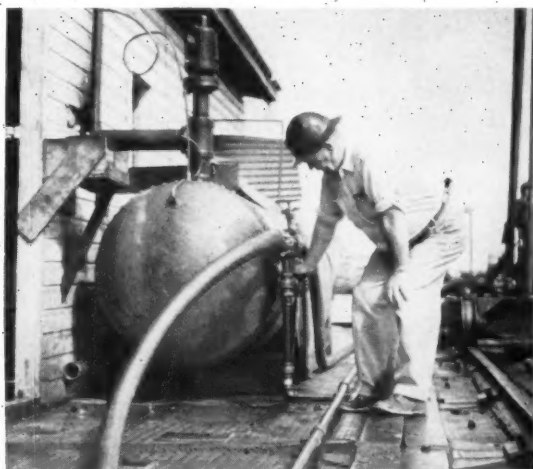
They solved it by setting up an Air Curtain between the sunken crib and the other two. Behind this shield they blasted out the useless crib quickly and safely.

The Air Cushion, being comparatively new, has not figured in as many different roles as the Air Curtain. But C.I.L. has proposed some possible uses for it.

One is to provide a shatter cut or burn cut in shaft sinking operations. In sinking a shaft through dry rock, the normal practice is to drill a pattern of blast holes for a delay series, leaving certain holes empty to provide a breaking space for the first holes that fire.

But if the ground is water-saturated, the vacant holes fill with water (which is incompressible) and the holes will not serve their intended purpose. The Air Cushion technique, i.e. filling the holes with air cans, could be an effective solution.

Another possibility is to cut seismic shock in excavations for buildings and other structures. A contractor might want to form a shear cut at the edge of a rock excavation where ground water would fill a line of empty holes. An Air Cushion would keep the water out and provide the necessary plane of weakness on the trim line.



**PROTECTION**—Tank feeds Air Curtain under barge. Pipes that pass under hull are perforated, releasing protective air bubbles.



**BLASTING**—Only visible result of blast on bottom is this slight upheaval of water that doesn't even rock the protected barge.



## HOW TO HANDLE WET JOBS

#43 of a Series

**Project:** Power Plant, Yankeetown, Ind.  
**Contractor:** Traylor Brothers, Evansville, Ind.  
**Owner:** Aluminum Company of America



Deep wet foundation rushed to completion as...

### "Aquahog" Wellpoints Yield 32 Million Gals per Day

With water from the adjacent Ohio pouring through coarse-layered soil, the sub-surface of Traylor Brothers' job-site was like a free-flowing channel from the river.

- Speedy, dependable predrainage demanded more than routine methods, and the wellpoint engineers turned to "Aquahog" wellpoints (a special Griffin type with double the usual capacity).

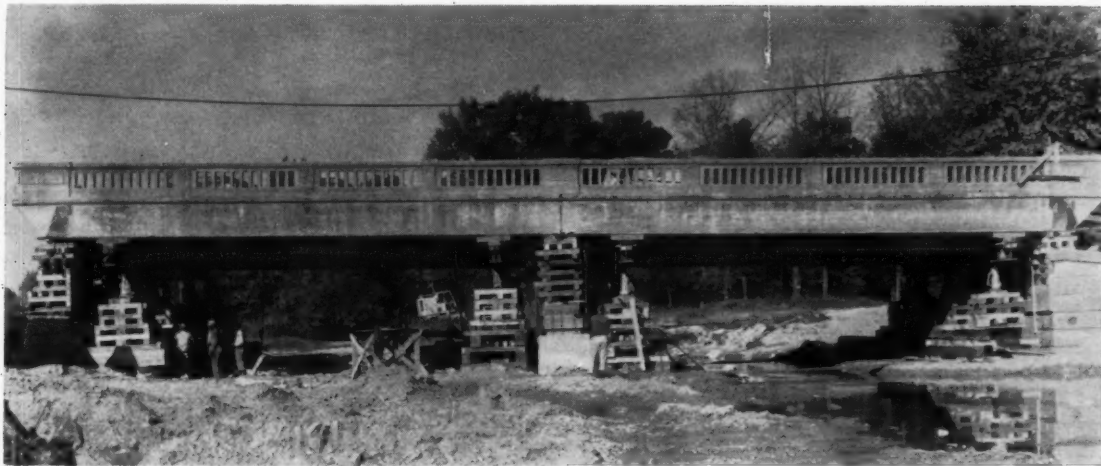
- Photo shows the job bone-dry as the multi-stage "Aquahog" wellpoint system pumps 32 million gallons per day to lower 27 ft of ground water in the 40-ft deep open-cut excavation. With speedy, efficient, properly engineered ground-water control, the contractor met his tight schedule successfully. When *your* wet work needs special handling, investigate Griffin's special-purpose equipment.

## GRIFFIN WELLPOINT CORP.

DEWATERING • SOIL STABILIZATION • JETTING

GENERAL OFFICE: 881 East 141st St., New York 54, N. Y.

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**JACKING PLATFORMS**—Temporary piers at each end of bridge, plus one on either side of central pier, each support four air mo-

tor jacks. Platforms are built of 12x12-in. timber. To fit flood control project, one end of bridge was raised 7 ft; the other end, 5 ft.

## Air Jacks Raise Concrete Span

IT SHAPED UP as a battle between the elements—air trying to raise a bridge, and water trying to stop it.

The bridge was a 100-ft concrete span on Route 208 over the northwest branch of the Anacostia River in Maryland. It had to be raised several feet to fit other phases of a flood control project designed to curb the destructive flash floods of the Anacostia.

Air entered the picture to power 16 air motor jacks that the contractor, LaPlant-Adair Co. of

Indianapolis, Ind., set up to raise the bridge.

And water, from a flash flood up the river, appeared on the scene suddenly and disastrously after the job was well under way. It knocked out a temporary pier and delayed the job, but couldn't stop it. Now the river has been tamed and will cause no more damage, to this bridge at least.

The bridge is only 20 years old and is in good condition; that's why it was raised rather than replaced. One end had to go up 7 ft to meet the top of a proposed

levee. The other end went up nearly 5 ft to match the raised level of a new road.

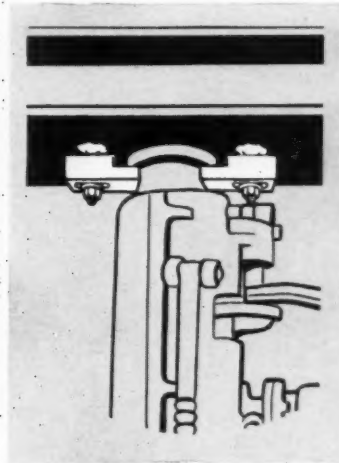
LaPlant-Adair decided on four jacking stations, one at either end of the two-span bridge, and two under the center.

Their first move was to set up platforms to carry the jacks. Crews laid down 4x6-in. timbers to form mudsills for these platforms. Next came layers of 12x12-in. timbers to form a crib pier. On top of this they put steel plates for the jacks to sit on.

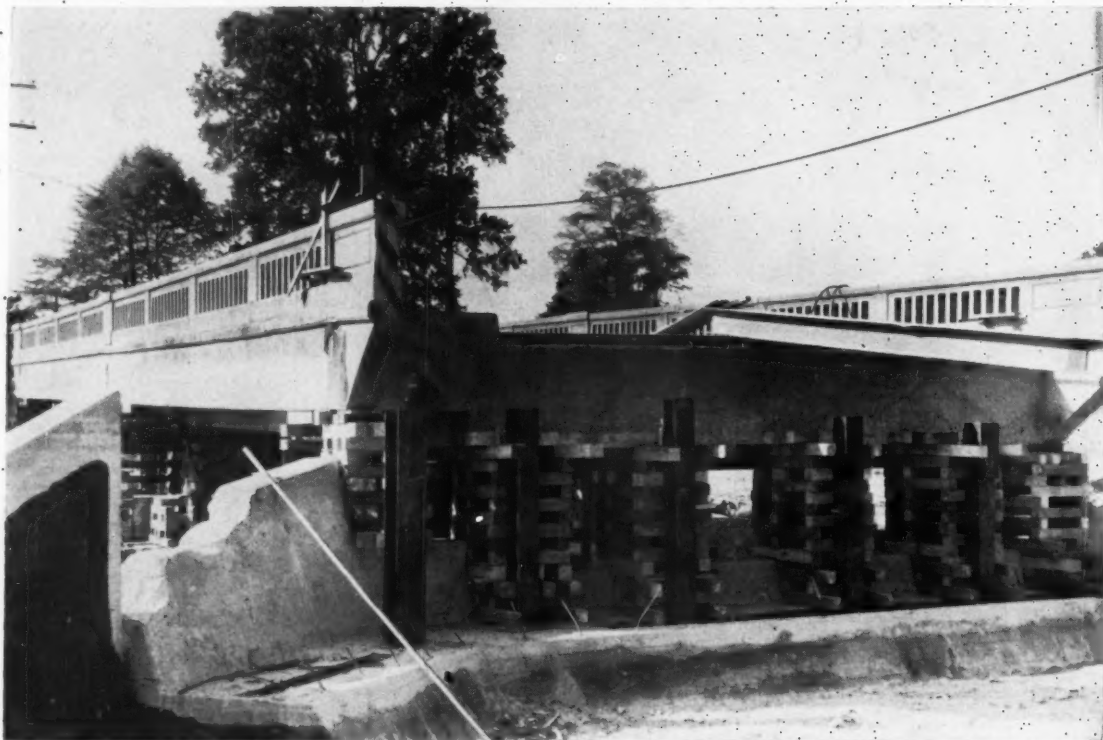
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**JACKING OPERATION**—Heavy H-beam, spanning width of bridge, transfers force of jacks to bridge superstructure. Jacks at each platform raise bridge 1/2 in. at a time.



**JACK DETAILS**—Clip fastens jack head to girder so jack can lift itself to new level.



**TEMPORARY SUPPORT**—Timber cribbing carries end of bridge after jacks have raised it. Before jacks started work, crew with air

hammers cut superstructure loose from abutment. Final job is to construct permanent foundations to support bridge at new level.

It took a total of 16 Joyce air motor jacks to raise the 640-ton superstructure. Four went on each platform. A Chicago Pneumatic 600 cfm compressor supplied air.

The eight jacks under the center of the bridge and the two inside jacks at each end were of 100-ton capacity. The four on the outside corners of the end platforms were of 50-ton capacity.

A heavy H-beam that spanned the width of the bridge went on top of the jacks on each platform. It transferred the lifting force of the four jacks to the bridge.

A special clip fastened the jacks to the beam. The clip was  $\frac{1}{2}$ -in. steel plate that fitted under the jack cap and against the ram. Two  $\frac{1}{2}$ -in. bolts held it to the beam. The clip was slotted so the jack could be attached or removed easily.

The clips were strong enough to carry the entire weight of the jack. After the jack had risen to its full height, cribbing was added to hold the beam in the new position and the air motors of the jacks were reversed. With the cap firmly joined to the beam, the jack base rose and extra jacking blocks were positioned underneath.

Before the jacks started lifting the superstructure, crews with air hammers broke the concrete connections at the abutments and at the central pier.

Rainfall was heavy during the 26 days it took to do the job. Once a flash flood swept down the river and took out one complete jacking tower, filling four of the jacks with sand.

About this time an executive of the jack company, who was making a routine flight to Washington, D. C., was surprised to find himself with 300 lb of excess baggage—replacement air motors and gears for the damaged jacks being rushed to the job site.

At the peak of this flood the water level was 8 ft above normal, and work was held up for several days. While they were waiting for the water to recede, the crews repaired the jacks. They also put in a protective earth dam upstream from the bridge to prevent further flood surprises.

Floods hit several more times and halted work for short periods. But the dam prevented major damage. A total of 10 days was lost because of high water.

The actual jacking took only

three days. Four men operated the Y-valves connecting the jacks and compressor.

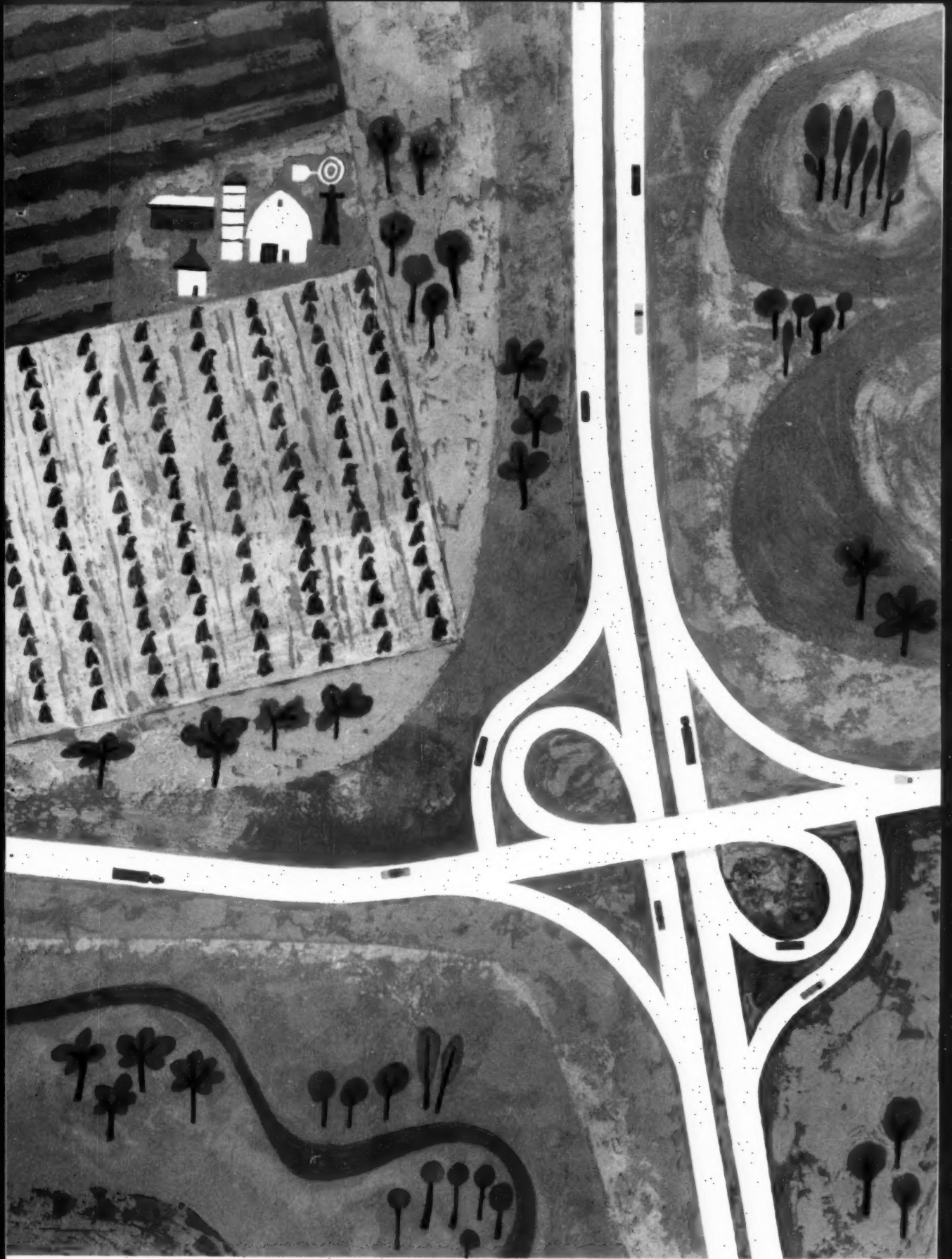
The jacks raised the bridge in increments of  $\frac{1}{2}$  in., whether it was the road side, levee side, or the middle that was being raised. This was possible because of the expansion joint in the middle of the bridge that acted as a hinge in the raising operation. The total rise of the jacks was  $11\frac{1}{4}$  in.; then they were reset.

Kenneth F. Adair, president and general manager of LaPlant-Adair, who was in charge of this job, was pleased with the choice of air-motor jacks for the lifting job.

"We prefer them to hydraulic and journal jacks because of the safety factor and because time studies show we get the job done faster and with less manpower," says Adair. "One man can cover at least two air motor jacks."

LaPlant-Adair did the raising as a subcontract for Allied Contractors, Inc., of Baltimore, Md., who held the prime contract for the bridge. Once the bridge had been lifted, Allied was able to complete the permanent underpinning in the fast time of eight days.





**INTERCHANGE USA** →



Interchange-USA



*Rough clearing*

**Specify Cummins for dependability**



Highway design was revolutionized when the first "cloverleaf" interchange went into operation in 1928 at Woodbridge, New Jersey. Since then, the interchange has become such an indispensable part of our highway system that nearly 9000 rural interchanges alone are planned in our new Federal Highway Program.

Cummins Diesels were first applied to motor-trucks and other haulage equipment for roadbuilding over 25 years ago, and their efficiency and long life have since made them one of the most dependable power sources for the construction industry.

Today, Cummins power can be specified in more than 300 models of all types of construction equipment. The machines shown above and on the following pages are Cummins powered.

#### **CUMMINS** *powered equipment in action:*

(Clockwise from top left) Pacific end dump • Diamond T trailer dump • Insley backhoe • Wooldridge scraper • M-R-S scraper • Bay City shovel • Euclid bottom dump • Elanco crawler tractor • Kenworth (Canadian Kenworth) end dump • Bucyrus-Erie shovel • International "Payhauler" • "Scoopmobile" dozer • Mack end dump • Brockway flat bed truck with Reich drill • Worthington compressor • Lima shovel and Le Tourneau-Westinghouse dozer





Interchange USA



*Final base work*

**Specify Cummins for fuel economy**



An interchange is custom designed to suit local traffic conditions. Costs may run from \$120,000 to upwards of \$10 million—exclusive of highway. Modern machines and methods permit year 'round construction in nearly every area.

By standardizing on Cummins, contractors can reduce road-building costs. Cummins Diesels offer proven fuel economy—saving as much as 50¢ per operating hour over competitive diesels!

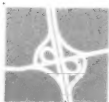
Another feature that influences the over-all economy and long life of a Cummins Diesel is its dirt-proofing system. Air cleaners, caps, connections and oil system provide the most efficient protection against the effects of dirt on today's high horsepower engines.

# **CUMMINS** *powered equipment in action:*

(Clockwise from top left) Adams grader • KW-Dart end dump • Iowa-Cedarapids rock crusher • Joy compressor • Cline dump • Marion shovel • Galion grader • Huber-Warco grader • Gradall (Duplex Div. • Warner Swasey Co.) • Manitowoc crane • Cook Bros. redi-mix • International (Emeryville) tractor • Hough front end loader • Oshkosh end dump • White tractor with American hoist on lowboy • Wagner dozer • Autocar tractor and lowboy and Thew Moto-Crane.



Interchange USA



*Paving and Finishing*

**Specify Cummins for more profit**





By 1969, nearly 41,000 miles of limited access highways will be constructed at a projected cost of \$39.5 billion dollars. Interchange costs may approach or exceed 25% of the total cost of the program.

Because of its potential volume and compact design, the interchange has become a sought-after project—one where standardization is desirable. To assist contractors in standardizing, more than 100 additional models have been added to the growing list of Cummins powered equipment in the last 2 years.

Today, more manufacturers utilize Cummins engines than any other independent make of diesel, ranging from the 75 h.p. J-4 (used in road rollers and shovels) to the 600 h.p. VT-12 (used in dump trucks, shovels, tractor-shovels, dozers and scrapers).

#### **CUMMINS** powered equipment in action:

(Clockwise from top left) Hayes dump • Pettibone-Haiss bucket loader • Link Belt shovel • Crane Carrier redi-mix • Worthington paver • Peterbilt dump • Koehring paver • Four Wheel Driver water wagon • International dump (on bridge) • Walter truck (under bridge) • Hendrickson tractor with Cummins powered generator on lowboy • Cummins powered finisher • Michigan scraper • Austin Western grader and Buffalo-Springfield compactor.



## INTERCHANGE USA

*In thirty years of development, the interchange has become indispensable to the modern highway system as a proven means of providing safe and fluid traffic flow. The diesel engine has become the accepted power for the equipment that builds these interchanges and roads.*

*In roadbuilding, for more profit, specify and standardize on Cummins Diesels in your new equipment. Specify Cummins when repowering too.*

# Specify Cummins when repowering

- **Cummins Engineered Repowering.** Installations in old equipment can be made on the job site, or in the Cummins Distributor's shop, especially equipped for engine conversions.
- **Cummins PT Fuel System.** This simple system, exclusive on Cummins, is foolproof. With it, maintenance costs are drastically reduced over any other system—gasoline or diesel.
- **Cummins Dirt Proofing System.** The positive dirt protection designed for new Cummins Diesels can be specified on Cummins power installed in your used equipment.
- **Cummins Long Engine Life.** Longer engine life with lower operating costs is a proven result of Cummins engineering research and full field testing.
- **Cummins Service.** Here is the most unique distribution organization in the country today. More than 300 service points are available throughout the United States and Canada. Call them for a repowering recommendation now.



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OVERSEAS FACTORY — CUMMINS ENGINE COMPANY LIMITED — SHOTTS, LANARKSHIRE, SCOTLAND — CABLE: CUMSCOT SHOTTS TELEX

why settle for concrete that looks like this ...

PLYWOOD FORMED CONCRETE >

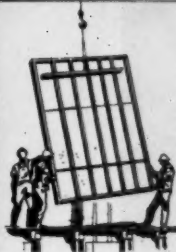
PLYGLAZE FORMED CONCRETE >

...when you can get really smooth surfaces like this

(and get double to triple the number of re-uses) with

# PLYGLAZE®

HIGH DENSITY OVERLAID PLYWOOD



If you have a job that calls for smooth architectural concrete—or if you can design forms to get 25 or more pours on the same or subsequent jobs—you can save money, time and trouble with PlyGlaze.

**SMOOTHER CONCRETE**—The untouched photos above, taken right after stripping, show the big difference in concrete formed against ordinary concrete form grade plywood and PlyGlaze high density overlaid plywood.

PlyGlaze's hard, glossy-smooth surfaces form really smooth concrete every time—unmarred by grain pattern, checks or plywood patches.

For jobs where architectural concrete is specified you can eliminate almost all rubbing and grinding, except for fins and tie holes. Ceiling slabs can be painted direct, without expensive plastering.

## GIVES UP TO 200 RE-USES—

With reasonable care, you should get from 50 to 75 re-uses with PlyGlaze. The limit actually depends on the form design and job requirements. Contractors who use panelized form sections with standardized tie-hole placements have reported getting several hundred re-uses.

**CUTS COSTS**—Although PlyGlaze does cost more initially than PlyForm grade Exterior plywood, it actually saves you money in the long run for these reasons:

1. PlyGlaze formed concrete needs much less finishing or sacking.
2. Oiling is not needed between pours other than to facilitate cleaning.
3. On jobs where form costs can be amortized over 25 or more pours, PlyGlaze actually costs less per foot of concrete formed.

### COST PER-SQUARE-FOOT-PER-USE\*

No. Re-Uses	10	25	50	100
PLYGLAZE	.037	.015	.007	.004
Exterior PLYFORM	.020	.008	Gives Max. 25 re-uses	

\*Based on the average prices quoted by St. Paul & Tacoma Lumber Co. during 1957 for the following material delivered in Chicago: 3/4" PlyGlaze, 3/4" PlyForm, oiled, edge sealed.

## SPECIFICATIONS, AVAILABILITY

**Material:** PlyGlaze is made by fusing a hard, glossy phenolic resin fiber to both sides of Exterior plywood. The overlay is not simply a coating that can work loose; it is fused under heat and pressure to become an actual part of the panel. It is more durable in every way than the wood itself.

Base panel is top quality DFPA-inspected solid core Exterior plywood. It is sanded *before* overlay is applied, assuring uniform thickness.

**Sizes:** (standard and custom) PlyGlaze is available in all standard plywood sizes and also can be custom-sized to your exact specifications.

**Source of supply:** PlyGlaze is available anywhere in the country; write for name of nearest representative. It can also be specified in lieu of ordinary plywood with most patented forming systems.

## POINTS IN BRIEF

- Has the strength, workability and adaptability of Exterior PlyForm.
- Strips easily; the hard non-absorbent surfaces will not stick to the concrete.
- Overlay will not soften or come loose.
- Overlay minimizes moisture pick-up and resultant loss of rigidity.

## ST. PAUL & TACOMA LUMBER COMPANY

Division of St. Regis Paper Co. / Tacoma 1, Washington



RE-USES	25	50	75
Lumber Forms			
Interior PlyForm			
Exterior PlyForm			
PLYGLAZE			

**MAXIMUM FORM RE-USE**  
Estimate assumes panelized sections, standard tie-hole placement, reasonable care on job.

Avg. for appearance concrete; up to 200 re-uses have been reported.

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**TWO BRIDGES, TWO DIKES**—Massman Construction Co. and Al Johnson Construction Co. push earthen causeways into Missouri River on bridge jobs near Mobridge, S. D.

## Guts, Machines, and Know-How

HOW FAR OUT can you push earthen causeways in a strong-moving stream to permit building river piers in the dry? Quite some distance with the necessary equipment, know-how, and courage.

A U.S. Army Corps of Engineers bridge job nearing completion at Mobridge, S.D., is a good example. There, Ace Construction Co. of Omaha, Neb., blocked nearly four-fifths of strong-moving Missouri River Channel with two earthen dikes. The dikes, which came out so far they almost took on the properties of a dam, did more than deliver substantial savings to the prime contractors for whom Ace was subcontractor. They created a new dimension in the utility of earthen causeways as an aid to bridge building.

One of the prime contractors on the job, Massman Construction Co. of Kansas City, Mo., holds a

\$1-million contract with the South Dakota Department of Roads for a highway bridge 5,058 ft long. The other contractor, Al Johnson Construction Co., of Minneapolis, holds a \$3.1-million contract for the substructure of a bridge for the Milwaukee Railroad. Both bridges will replace existing spans that water backing up behind the Corps of Engineers' Oahe Dam 130 mi downstream will drown out.

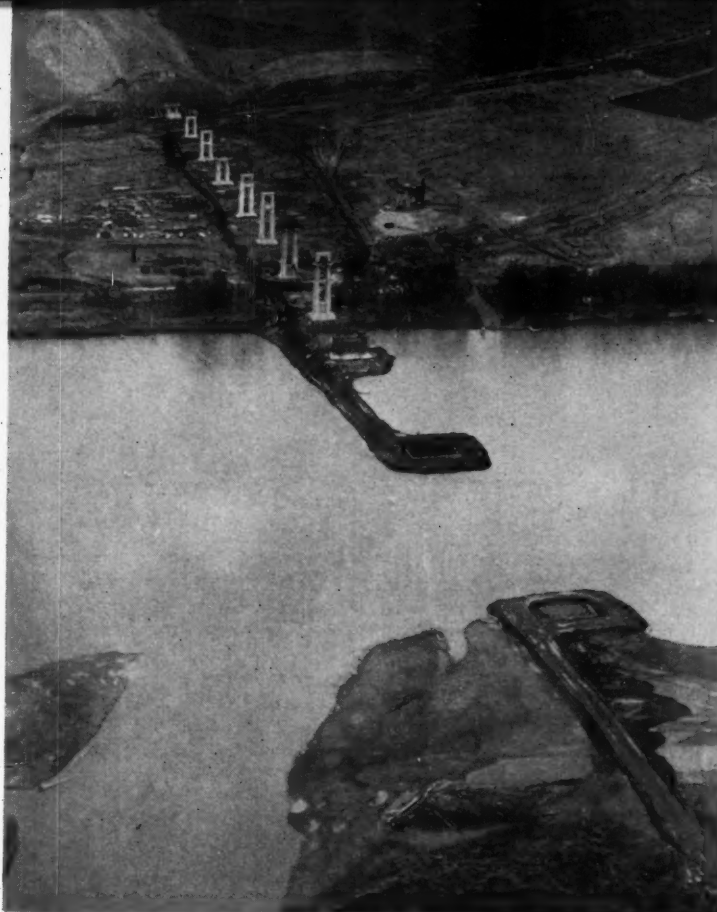
Nine water piers were designated for the job. Johnson's contract called for five while Massman's called for four. Both contractors independently considered three alternate methods of placing the piers for the bridges located about a quarter of a mile apart. These methods included:

- Work from a floating plant
- Work from a trestle
- Build causeways and build piers in the dry

Both contractors ruled out working from a floating plant. At Mobridge, the Missouri, though 1,000 ft wide, is so shallow people in the area say "the catfish have sunburned backs."

As for the trestle, both contractors agreed that a work bridge scaled to the heavy equipment needed for the job would just have to be too big. Both building and dismantling such a trestle would require too much time and effort.

The causeway method seemed to be the best bet. But causeways usually are employed on river work where hydraulic characteristics are not materially altered. The pier placement pattern at Mobridge would require causeways that would squeeze the Missouri down to a wier so narrow it would be near impossible to avoid radical hydraulic consequences. So, at first glance, the



**PIER WORK**—Water pier construction gets underway on Massman's completed causeway. Piers will support a 5,058-ft highway bridge for the South Dakota Department of Roads.

## Beat Fast Currents

Mobridge layout violated the general rules for use of causeways.

But Mobridge offered special inducements that made the contractors study the possibilities more closely. First, they discovered an ample supply of weathered shale economically close at hand as a source of fill material. The shale's density of around 3,000 lb per yd, along with its physical characteristic of greasy cohesiveness, promised resistance to erosive whittling of fast water.

Secondly, after studying the schedule of water releases from upstream Garrison Dam, which promised a steady 21,000 cfs, the contractors knew the flow would be relatively constant and in low volume.

Flood threats were another problem. These were limited to four streams—Grand, Cannonball, Knife, and Heart—that debouch below Garrison Dam. None

had a reputation as a troublemaker. Even if they became troublesome, the contractors reasoned,



**BOILING WATER**—Narrowed gap engages river which pounds against rip rap.

the causeway's cheapness—it's only a fraction of that of a trestle—meant that replacement could take place several times in case of washouts and still represent a saving.

These factors reduced the odds enough to make the gamble seem worthwhile though, according to Kenneth Sevey, superintendent for Massman, "the operation had to be experimental."

Experimentation was to get a bit sticky before success came. Johnson called on Ace to construct its dike. Ace was working nearby on a \$1.8-million job placing 2,833,000 yd of fill for a relocated Milwaukee railroad crossing at Grand River. Ace detached from its fleet three 18-yd scrapers, a dozer, a push tractor, and a motor grader—Ace uses Caterpillar equipment exclusively—and went into action.

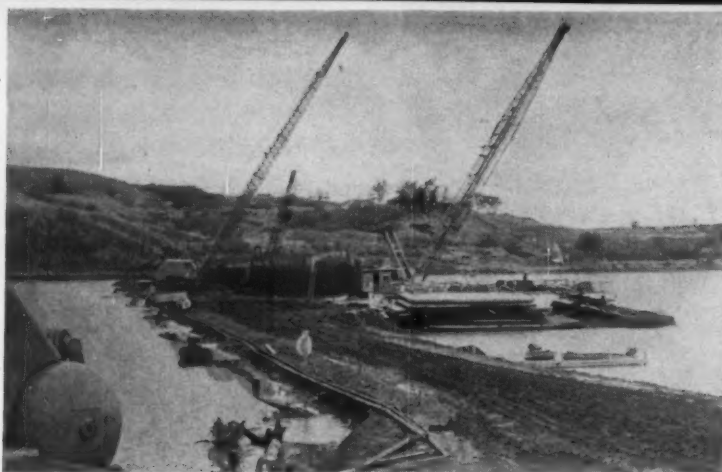
"Everyone said we couldn't get out there," Parker Perickson, Ace president, recalled of the beginning of the job. "And for a while we began to think so, too."

Ace's job—as it shaped up—called for narrowing the river gap to 300 ft. This required a causeway 850 ft long. Its top was to be 30 ft wide, calling for precise driving of scrapers whose turning radius is 38 ft. Sides were to have a natural slope.

With 2½ ft of freeboard to take care of river fluctuations, the dike's height worked out at an average of around 7 or 8 ft with a bottom width of close to 100 ft. About 40,000 yd of fill were required. Access to the embankment came by placing 8,500 yd of fill for a haul road, while scrapers worked on a 15,000-ft cycle under



**WAVE CUSHIONS**—Trees lashed to upstream face deaden possible wave action.



**ALMOST A DAM**—Cranes drive pier sheeting from atop Johnson causeway that extends so far out into the Missouri it appears from shore to be blocking the entire river.



**BRIDGE APPROACH**—Huge hill in background will support bridge approach. It was hydraulically filled from material dredged from the river by Western Contracting Corp.

## GUTS, MACHINES AND KNOW-HOW BEAT FAST CURRENTS . . . continued

a schedule of 4,000 yd of fill placed daily.

Work went fast as the scrapers pushed the dike out from the right bank. The first day's work saw 150 ft of causeway in place. But the chore grew tougher as the increasing impingement of the causeway progressively honed the water's cutting action. This forced the river to sweep fill material downstream and scour ahead of the dike. In places, 15 ft of fill were required where the current gouged the river's bed.

### Complications Arise

An untoward circumstance complicated the final phase of placing the causeway. A stratum of shale underlay the entire river at a point starting well below the river bed on the right bank. The shale inclined upward in a long diagonal until, on the left bank, it came out of the river flush with the water surface. The effect of this was to put a sill under the weir section. There, water gouged out the 2 ft of sand on top of the shale and then was stopped.

So the river, unable to widen the weir by erosion, began to build up. The water level inched upward until it built up a 2-ft head on the upstream side of the causeway. The current that boiled through the gap increased its initial flow of 4 ft per sec to 7 ft per sec. It got so bad, a contractor's towboat that tried to make it through the opening was sent spinning downstream.

Building the causeway turned into a fight against the river. Onrushing water washed away more and more material until, at last, a full 25% of fill material pushed over the end was lost downstream.

Ace turned to rip rap. For the last 100 ft of causeway the contractor build up—sparingly at first but then more and more—a virtual solid armor against the water. The job took some 800 yd of rock, with stones sometimes as big as 6 ft in dia. And when current pulled fill from the interstices, the contractor chunked in gravel. Ace further fought the river by lashing tree trunks to the

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It adds up to this: buy Blue Brute tools and "no time is down-time." See your nearest Blue Brute distributor for the complete details about the Guaranteed Availability Plan.

**WORTHINGTON**



upstream causeway as a cushion against the pounding of waves.

### A Tough Fight

How tough was the fight at this point? Progress, as compared to an 82-ft daily average rate slowed so the last 30 ft of work took 60 hr to place, or a rate of about a ½-ft per hr.

To get the necessary 40,000 yd into place, 54,850 yd of material was pushed into the river. In all, it took 12 days of round-the-clock

work to complete the causeway.

"If we had to go another five feet," said Stan Johnson, project manager, "I'm not sure we would have made it."

Massman's causeway, by contrast, went in quickly. For Ace, this primarily was a job of reconstruction. Massman built a dike last fall to get the project rolling but anticipated that some of it would wash out in the spring ice run. Ace's job was to replace the washed out portions.

The work went easily. This was attributed by Sevey to a deep layer of sand with no shale underlay in the river bed at the causeway's locale. As the river channel narrowed down with the work, it dug itself correspondingly deeper. Depth in the channel section of the Massman job stood at 30 ft the last time it was sounded. The amount of head was less than 0.1 ft. With virtually no head to combat and little consequent wastage of material, the dike was placed in 20 hr. Although shale was employed, construction ease indicated no particular need to use selected material.

### Lessons Learned

With the causeways successfully built, heads of both firms agreed they had learned several important lessons in the use of causeways. They were:

- Causeways can be employed much more extensively than is general practice.
- Construction of causeways offers no particular problems in alluvial rivers or those with a soft bottom; and run of the job materials can be used for fill.
- In a river underlain with gravel or other types of hard bottom—such as Moberg's shale—hydraulic consequence carefully must be appraised before deciding to go the causeway route.

### Other Work

The bridge jobs are part of extensive relocation work being carried on in the Moberg area. In all, there are 20 active construction contracts totalling \$20 million involved. Approximately \$12 million are involved in the relocation of the Milwaukee railroad and in the relocation of sewer and water facilities at Moberg (CM&E, March, p 80).

Approximately \$2-million are involved in two current contracts for the relocation of the Cheyenne Indian Reservation at Eagle Butte. Two additional contracts are scheduled for award in June. These cover construction of the superstructure of the Milwaukee Railroad Bridge over the Missouri and the substructure and superstructure of the Grand River Railroad crossing. The work is being carried out under the direction of the Omaha District of Army Engineers. Col. David G. Hammond is district engineer.

announcing a whole new line  
of single axle  
over-the-wheel platform  
trailers



**NEW**  
**MILLER**  
model "J"  
**Tilt-Tops**

available in  
**3** capacities

"J-6" six tons  
"J-8" eight tons  
"J-10" ten tons



model illustrated  
MILLER "J-10" \$1250\*

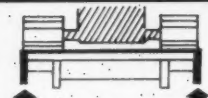
The new "J" line... more husky than the "B" line of over-the-wheel platform models it replaces... is introduced at no increase in price... again offers economy minded contractors more capacity per dollar.

And you get all the speed and handling ease that helps you cover more jobs with one rig! One man can tilt, simply drive the equipment onto the broad oak decked platform, be on his way in less than two minutes. Shuttling tractors or other rigs from one job to another is so easy, so fast... it can often save duplicating expensive equipment.

Each new "J" model has the new extra deep side channels for maximum strength right at the platform edges where wide tracked rigs impose heavy strains.

See these new production boosters at your MILLER distributors today.

\*F.O.B. Milwaukee  
Complete with platform and tires.  
Any optional equipment extra.  
\*Plus 10% Federal Tax



new 10" deep  
side channels

Extra deep side channels, integrally welded to heavy cross members, provide rigid support for the heavy strains imposed along the edges by wide tracked rigs.

"H" beam axle

Super tough, this H beam straight-thru axle has solid steel, stub inserts for extra strength over rough roads. Long life Timken roller bearings assure positive wheel alignment.

**Miller**  
**Tilt-Top Trailer Inc.**

✓built best ✓priced best

See your MILLER distributor  
or write for FREE literature.

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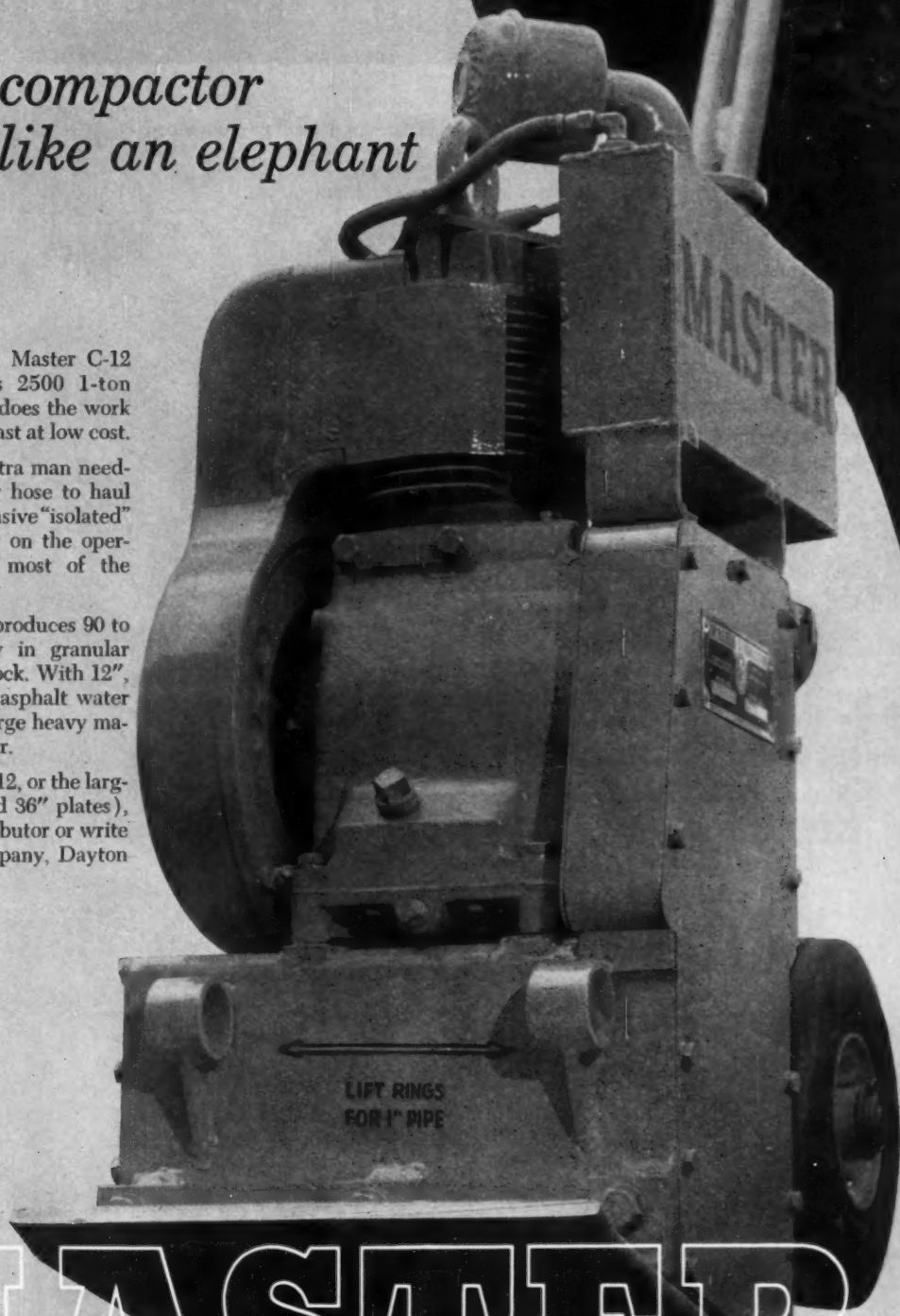
## 236 lb. compactor stomps like an elephant

**POWERFUL**—The new Master C-12 compactor punches 2500 1-ton blows per *minute* ... does the work of a 10-ton roller ... fast at low cost.

**HANDY**—there's no extra man needed; no compressor or hose to haul around. Master's exclusive "isolated" handle makes it easy on the operator by dampening most of the vibration.

**EFFECTIVE**—it easily produces 90 to 100% Proctor density in granular soil, sand, gravel or rock. With 12", 18" or 24" plates or asphalt water shoe, it goes where large heavy machines can't maneuver.

For facts about the C-12, or the larger C-36 (24", 30" and 36" plates), call your Master distributor or write Master Vibrator Company, Dayton 1, Ohio.



... the light construction equipment used by most contractors: bridge deck finisher; vibratory screeds; "1-Man" vibrators; gas and electric powered flexible shaft vibrators; vibratory compac-

tors; 29" power trowel; 34" Powermatic trowels; 34" and 48" Turn-A-Trowels; disc floats, grinding heads; 750 watt to 5KW generators; 125,000, 250,000 and 400,000 BTU heaters.



## 6 weeks construction time saved with LEHIGH EARLY STRENGTH CEMENT

• The City of Rochester, N. Y. is known as a pioneer in providing multi-story "self-service" parking facilities. The one shown here is the Mortimer Street Parking Ramp, recently opened in the heart of the downtown business district.

Concrete made with Lehigh Early Strength Cement was chosen for this ramp for two reasons. First, because a fast schedule had been set up to place concrete before the coldest months. Second, the city wanted the ramp to begin producing income as soon as possible. The results speak for themselves. Concrete pours were completed by early December, cutting construction time by 6 weeks. The ramp was opened in March, in time for Easter shoppers.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

#### CONTRACTOR:

A. Friederich & Sons Co.  
Rochester, N. Y.

#### ARCHITECT:

Bohacket and Flynn  
Rochester, N. Y.

#### READY MIX CONCRETE:

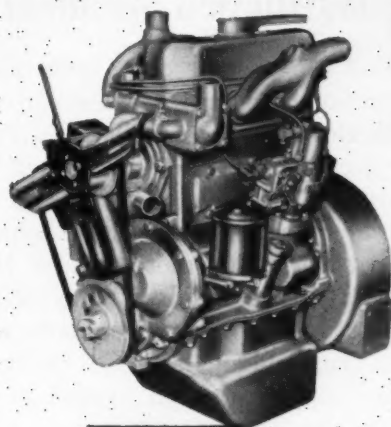
I. M. Ludington's & Sons, Inc.  
Rochester, N. Y.



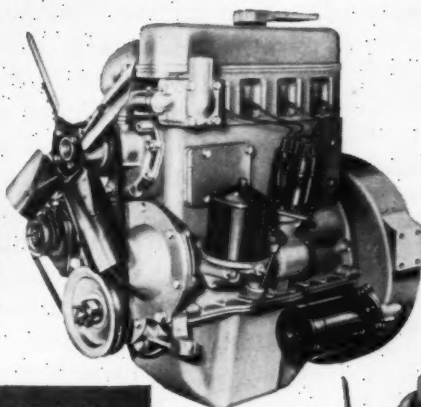
Eight parking levels contain 523 metered spaces. Motorists park their own cars, taking advantage of such modern features as automatic coin changers, passenger elevators and a counting system which tells them where spaces are available.

**LEHIGH PORTLAND CEMENT COMPANY • ALLENTOWN, PA.**

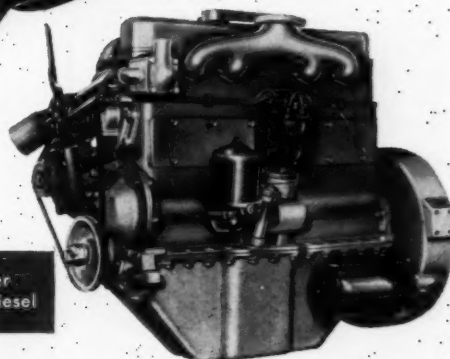
# Whatever size loader you buy, you'll save with Hercules power



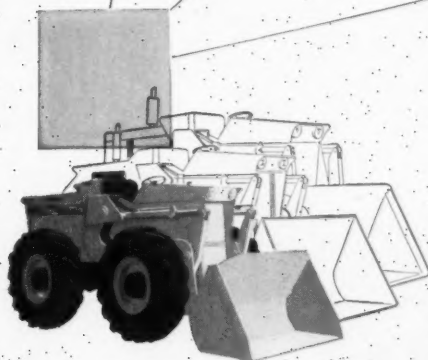
3-Cylinder  
Gas or Diesel



4-Cylinder  
Gas or Diesel



6-Cylinder  
Gas or Diesel



## New DD and GO engines offer maximum parts interchangeability

HERCULES 3, 4, and 6 cylinder GO gasoline and DD diesel engines offer the user maintenance economy never before possible.

For when you specify Hercules power for all your equipment, you can reduce spare parts stock to a minimum. These new DD and GO engines were designed with the highest possible degree of wearing parts interchangeability: one set of spares will service some 18 engines,

both gasoline and diesel. Of course, you can leave your engine service to Hercules world-wide distributor network and save even this minimum maintenance inventory expense.

If you'd like a quick visual demonstration of how this parts interchangeability can save you money, ask your nearby Hercules representative for your copy of an illustrated booklet. Or write Hercules Motors Corp., Canton 2, Ohio

**HERCULES ENGINES**  
...Sold and Serviced the World Over



**HERCULES**

HERCULES MOTORS CORPORATION  
Canton, Ohio

## A SURE-FIRE SUCCESS FORMULA!

The Cunningham Construction Company is proud of its reputation for high-production earth moving. Says Don Cunningham: "The combination of Allis-Chalmers' productive machines and a first-rate operating crew, teamed with the excellent service our dealer provides, amounts to an unbeatable formula for sure profits in this industry."

The equipment spread includes four Allis-Chalmers motor scrapers—two TS-360's and two TS-260's—plus five turbo-charged HD-21 crawler tractors. Two of the tractors are used as pushers, one as a dozer. Another HD-21 tows a four-gang sheepsfoot roller and the fifth pulls an 18-yd scraper. An Allis-Chalmers FORTY FIVE motor grader levels fill, keeps haul routes smooth for high-speed scraper cycles.



Big 120-horsepower FORTY FIVE motor grader blades fill at dam site, keeps pace with fast-moving equipment like the 20-yard TS-360 motor scraper at right.

The flood control job consists of building two dams and diversion dikes, moving an estimated 325,000 cu yd in the Dona Ana area north of Las Cruces, New Mexico. Working a 54-hour week, the 10-man crew moved nearly 200,000 yd in the first 4½ weeks. This impressive volume brought construction people from all over Texas and New Mexico to see the spread in action.

Don Cunningham, veteran of more than 30 years in earth moving, points out that such performance is a powerful factor in bringing in more construction jobs.

# They cut a flood control job with Allis-Chalmers construction machinery!

Don Cunningham Construction Co.—with a crack crew and a fleet of Allis-Chalmers construction machines—have set an outstanding record on a New Mexico soil conservation job. They completed a flood control project scheduled for 180 days in 75! It involved 325,000 yd of earth fill.

Don Cunningham gives major credit to his Allis-Chalmers fleet—motor scrapers, crawler tractors and motor grader. He's convinced that top machine availability and extreme ease of handling are the big reasons why men and equipment were able to maintain the record pace. Cunningham estimates profit on this contract will be 20 percent greater than figured in the original bid—a hefty bonus on any job!



## Look ahead... *move ahead*...and stay ahead

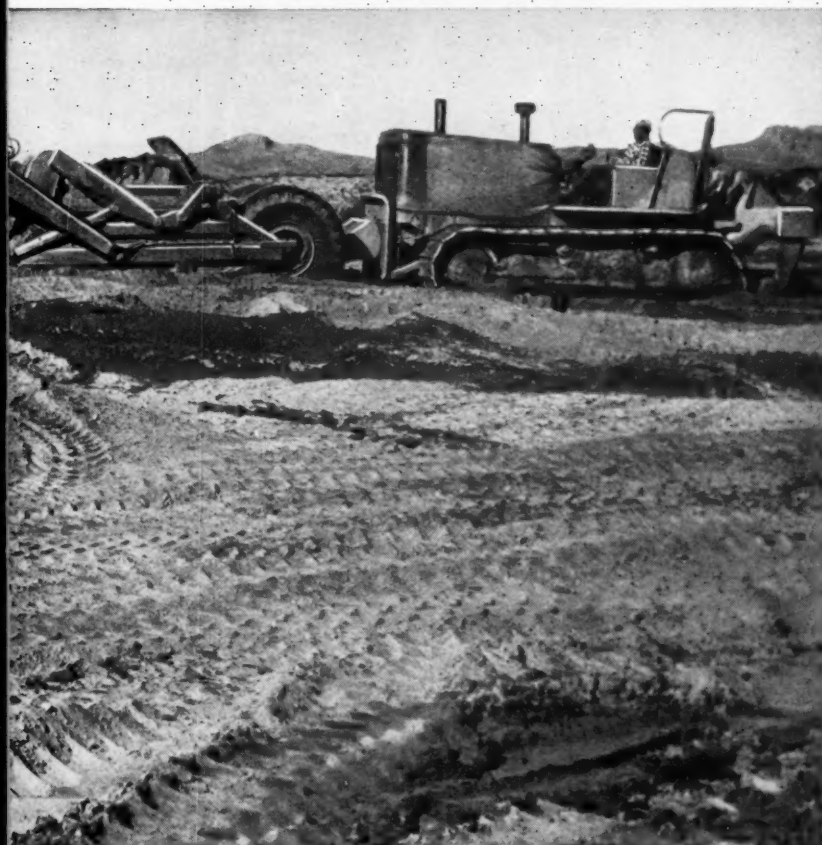


# 6-month to 2½

*Don Cunningham  
El Paso, Texas*



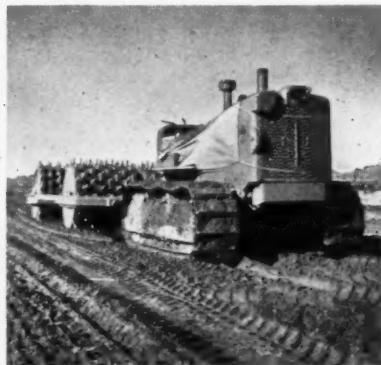
Four Allis-Chalmers motor scrapers, push-loaded by 225-horsepower turbo-charged, torque converter-equipped HD-21's, moved nearly a quarter of a million yards the first month, helped boost profits 20 percent for the whole job.



## PREVENTIVE MAINTENANCE PAYS OFF AGAIN!

Chief mechanic, "Snuffy" Oliver, and his assistant have an effective preventive maintenance program, including daily inspection of tracks, fan belts, blowers, turbochargers, cables, clutches.

This regular maintenance keeps Cunningham's Allis-Chalmers fleet in first-class condition. Daily lubrication, servicing and inspection requires about 20 minutes a day for each machine. No other time was lost during the nine-hour working shift.



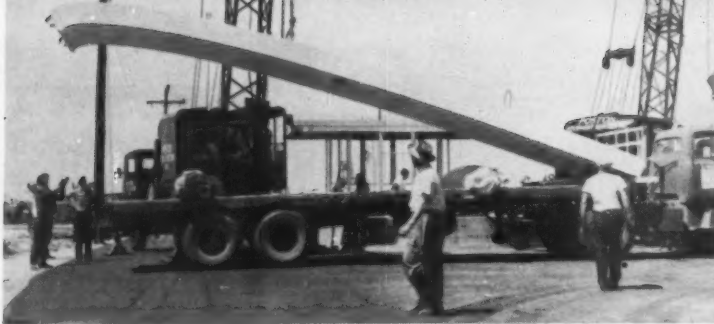
Compacting scraper-hauled fill, big HD-21 crawler tractor tows four-gang sheepfoot roller.

The easy-service design of Allis-Chalmers crawler tractors, motor scrapers and motor graders speeds the preventive maintenance routine. For example, truck wheels, idlers and support rollers need lubrication only once every 1,000 operating hours. Time-saving convenience like this keeps every machine ready for action.

Whether your operations call for one unit or a fleet, you can get high production like this. Your Allis-Chalmers dealer will recommend the right equipment for your jobs—from a complete line of up-to-the-minute construction machinery. See him now and ask for a demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee, Wisconsin.

with **ALLIS-CHALMERS**





**TRANSPORTING**—Crane removes arch half from truck that has hauled it 5 mi from casting yard. Precast technique allowed more control of concrete mixing and placing.

## Concrete Arch Requires Specialized Techniques

CONSTRUCTING a 36-ft high concrete arch isn't a big job. But it does call for a special kind of know-how.

Layne, Inc., of Florida wanted such an arch for the gatehouse at the entrance to the Golden Isles residential development they are building at Hallandale, Fla. To get the right kind of know-how they sub-contracted the construction to specialist companies.

Lewis Manufacturing Co. of North Miami Beach, Fla., precast the arch in two sections. Poston Steel Erection, Inc., put them up.

The arch consists of two 12-ton halves. In cross-section the halves are channel-shaped with an 8-ft-wide by 8-in.-thick center slab and 8-in.-wide flanges.

Lewis crews poured the two sections in horizontal plywood forms. First they set up the slab and side forms, inserted a reinforcing cage, and poured the center slab. Immediately on top of this they added a ½-in. layer of white cement and granite aggregate to form the exposed surface of the arch. When they poured the flanges they inserted lifting hooks for later handling.

Normal form oil would have stained the white concrete. So they painted the forms with a resin paint, then treated the paint with a silicone release agent.

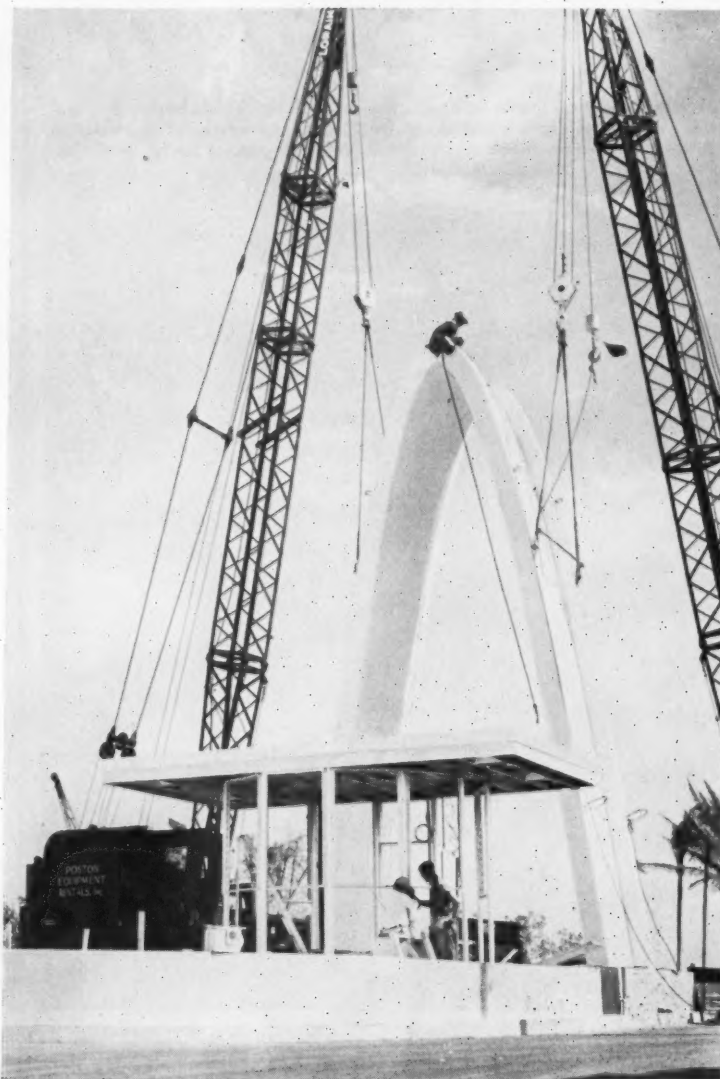
To make the slab and flanges monolithic, they added Plastiment to the first pour to retard the setting. They covered the entire unit with a thin white cement wash and rubbed the visible form joints to insure an even finish.

The concrete in the arch was of a high early strength design that tested 5,000 psi at seven days. This allowed Lewis to remove the

forms after two days.

Two trailer trucks moved the sections 5 mi to the erection site where two 20-ton Lorain truck cranes handled erection. One crane picked up the first section by its lifting loops and placed it on a tarpaper gasket on the concrete foundation.

Then the second crane lifted the other half into place and held it while erection crews joined the halves together at the top by welding the protruding reinforcing bars. To complete the top connection they inserted a decorative 1,200-lb. concrete crown piece in the slot between the halves, welded it to the rods, and grouted in the joints. The erection took 2 hr.



**ERECTING**—Two cranes swing two halves of arch into position so that welder on top can connect them by welding reinforcing bars together. Whole erection took 2 hr.

what's it worth

to have Maneuverability



this **DAVIS RIG** knows no **EQUAL!**



**EXCLUSIVE FLUSH-DIGGING!** Entire mast and boom assembly shifts from center to either side for flush digging alongside buildings, fences, by trees, and other obstructions. Only Davis offers this advanced feature!



**YOU ALWAYS FACE YOUR WORK!** Seat and control assembly is mounted on mast assembly... swing to face the job regardless of operating angle. You work fast because bucket is visible, controls at your fingertips.

Maneuverability more than any other factor governs the time you take to complete a job. That's why you're money ahead with the advanced maneuverability features of a Davis Loader-Backhoe!

**Close-in Design Lets You Work in Tight Situations** — Your Davis rig hugs close to the tractor — top, bottom, and sides. You have no obstruction to mar your vision. Lets you work with minimum clearance.

**Better Visibility Lets You Maneuver with Speed and Accuracy** — You don't "feel" your way with a Davis... You see the work area clearly as you shuttle from load to dump.

**Alert Controls Let You Handle Machine with Ease** — All controls are independent and located for fingertip convenience... respond lightning-fast to your touch. Ease of handling reduces operator fatigue to increase production.

**Works Where Others Won't** — The Davis Backhoe's exclusive flush-digging feature and ability to dig at any angle up to 200° often lets you complete a job in the time it takes other makes to get into position.

Davis Loaders and Backhoes are available for all popular models of International, Ford, Fordson Major, Ferguson, Case, Massey-Harris, Allis-Chalmers, Oliver, John Deere, Minneapolis-Moline, and Work Bull Tractors.

**SOLD AND SERVICED EVERYWHERE BY BETTER DEALERS**

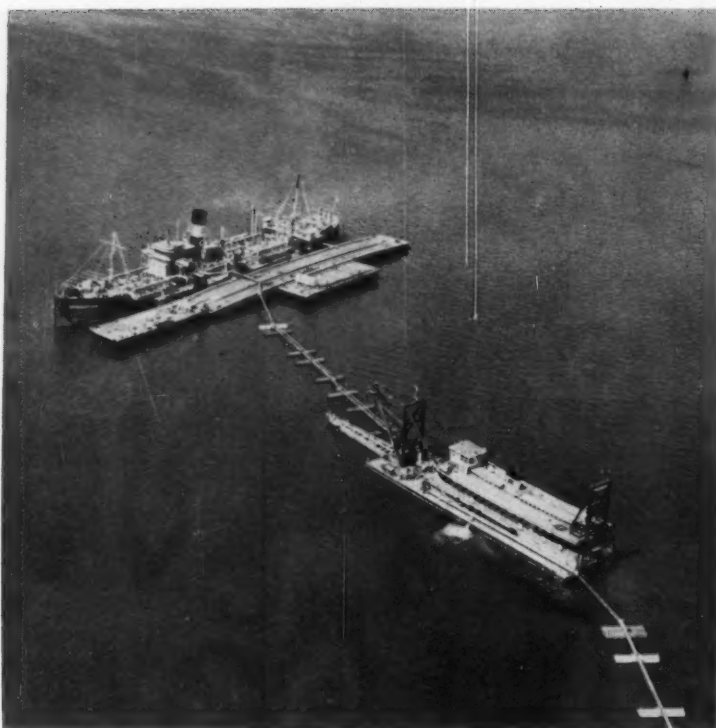
For the name of your nearest dealers write direct. Please specify make of tractor.



**MASSEY-FERGUSON INDUSTRIAL DIVISION**

1009 S. WEST STREET • WICHITA 13N, KANSAS





**FROM OCEAN BOTTOM**—Hopper dredge carries sand 30 miles to end of pipeline at offshore station. Pumps on booster dredge raise pressure to 145 psi to push sand to fill area.



**TO SHORE**—The 20-in. discharge line extends for one mile on floating pontoons and

## Pipeline Two Miles Long

**SAND DREDGED** from the ocean floor 32 miles away is filling in a 15-acre boat basin at La Guardia Airport in New York City.

A self-loading hopper dredge picks up the sand and carries it 30 miles to a pumping station at the end of the pipeline. A second dredge tied up at the pumping station boosts pressure in the line to send the sand and sea water mixture two miles to the fill area.

Construction Aggregates Corp. of Chicago is the contractor for the Port of New York Authority on the job. They assigned to the project the 3,000-ton self-loading hopper dredge ship, Sandcaptain, one of a fleet of ocean-going dredges that the company maintains for land fill operations.

Why bring sand so far? Project Superintendent Homer Amsler explains the setup this way: "There's no suitable material in the immediate vicinity. But we had already used sand from this spot off Coney Island for a previous Port Authority job on the Brooklyn piers. We found it well

suited to hydraulic placement so we decided to use it on the La Guardia job. The sand meets Port Authority specs—just about the right degree of coarseness."

The cycle starts with the loading operation: Two suction drags are lowered 25 ft to the ocean floor. A 20-in. centrifugal pump sucks sand up and washes it through a series of screens and into the 3,000-yd-capacity hold. The screens insure proper gradation of the material. Fines and oversize material are washed out with the overflow water.

### Tides Set Pace

Schedule of the ship on its twice daily trip is set to take advantage of the tides. Each round trip takes 11 hr, including 3 hr each for loading and unloading. Time between tides is slightly over 12 hr so there isn't much leeway. With a top speed of about 10 mph, the ship has a tough time making up for any lost time. Delay of an hour or so anywhere along the line can throw the

schedule out of joint. And every load counts in this around-the-clock, seven-day-a-week operation.

When the Sandcaptain arrives at the offshore pumping station, it ties up to three mooring dolphins at the end of the discharge line. Each dolphin consists of 30 timber piles. Alongside the dolphins, a large barge provides work space for the crew who connect the pipeline to the outlet from the hold of the ship.

With the discharge line hooked up, water jetted into the hold washes sand into the mixing well where more water is added before the mixture reaches the line. Ordinarily the mixture is 15% sand, 85% water.

The ship's one 20-in. pump is not powerful enough to push the sand all the way through the long line. Two booster pumps on another dredge anchored near the end of the line help out. The two 20-in. pumps on the booster dredge, powered by a 1,600-hp diesel engine, raise the pressure



timber trestles to reach shore, then stretches another mile overland to reach fill.



**INTO FILL AREA**—Mixture of sand and sea water finally flows into 10-ft-deep basin. Fill is brought up evenly in 2-ft layers to prevent mud waves boiling up out of bottom.

## Delivers Sand Fill to Airfield

in the line to as high as 145 psi.

### Two Mile Long Pipeline

The 20-in. discharge line extends for the first 3,000 ft from the pumping station on floating pontoons, then runs on timber trestles for the remaining 2,000 ft to shore. Depth of water is about 25 ft at the end of the line, but it drops off quickly to 5 ft under most of the line. Pipe sections in the over-water portion of the line are 80 to 100 ft long.

The 6,000 ft of overland line skirts the runways that crisscross the field, then follows an inlet to the basin. Timber cribbing cradles the pipeline over depressions and holds it at a fairly uniform grade, but most of the line lies directly on the ground. A short section at the end of one of the major runways is dug in to avoid interference with air traffic.

At the boat basin end, the line branches from four Y-valves inserted at intervals along the terminal section. Construction Aggregates uses light, easily-hand-

dled pipe for these final lengths. Rest of the line, most of which will be in service for the duration of the job, consists of Armco Spiralweld pipe connected with Dresser couplings. Laying the pipeline, which took about two months altogether, was delayed for a month by snow.

### Soft Bottom

Most of the area on which the airport stands is a man-made peninsula. Beneath the boat basin itself is a 60-ft-deep layer of soft, oozy mud. To prevent mud waves from boiling up through the sand blanket, the fill material must be brought up carefully in 2-ft layers and spread evenly.

Plans call for an average depth of 15 ft of fill above the bottom of the pool, which is about 10 ft deep. But the contractor is placing an additional 12 ft of overburden on top of the fill to consolidate the underlying material. Coarseness of the sand in the fill material leaves pore spaces through which the excess water

in the lower layers percolates upward and flows out of the basin through the inlet. The overburden will be stripped off later when settlement stops. So far sounding rods indicate settlements of from 1 to 5 ft.

Construction Aggregates has pumped over 500,000 yd of sand into the basin. The inlet will also be filled as the second stage of the project. Started in the middle of March, the project is scheduled for completion this fall.

### Modernization Program

The work at La Guardia is part of a \$35-million, 6-yr rehabilitation program. Included in the project is a huge new terminal building and major runway improvements. Cost of filling and paving the boat basin for use as a parking area is estimated at \$3.7 million.

Resident engineer on the job for the Port of New York Authority is Frank Wagner. Construction Aggregates' superintendent is Homer Amsler.

# ONLY CATERPILLAR GIVES YOU THE OIL

## Here is what you should know about its money-saving and operating advantages

How much better is the exclusive Caterpillar oil clutch than the ordinary clutch? It can be summed up in this short statement:

When the Caterpillar oil clutch is ready for *adjustment*, the ordinary clutch is ready for *replacement*. Experience in the field proves it.

In the years since 1954, when Caterpillar introduced this remarkable advance in earthmover power trains, owners all over the country have reported thousands of hours of oil clutch operation free of adjustment or repair.

Typical of these reports is this one from Myron Omernik, land improvement contractor of Custer, Wis.: "Our D7 has operated 5,100 hours without any oil clutch repairs or adjustment."

This performance record means two clear-cut money-saving advantages:

1. Virtual elimination of down time caused by clutch failure.
2. Greatly reduced repair costs.

But in addition to its economy features, the oil clutch also provides superior operation. Here is why:

## IMPORTANT OIL CLUTCH FEATURES

Independent oil pump assures positive lubrication and cooling for clutch plates, bearings and other vital moving parts.

Heavy-duty bearings have extra capacity for long service life.

Clutch brake helps match clutch and transmission speeds—makes shifting easier.

Removable coupling allows clutch to be removed without disturbing engine or transmission.

Double clutch plates are metallic-faced for heavy-duty torque transmission.

Intake screens protect the oil pump from foreign material.

1. A hydraulic booster on the D9 and D8, operated by clutch oil pump pressure, takes the effort out of clutch operation but retains clutch "feel."

2. Clutch "fade" because of overheating is practically eliminated. The oil in which the clutch parts run is pumped directly from the crankcase. This means the clutch temperature never rises above engine temperature.

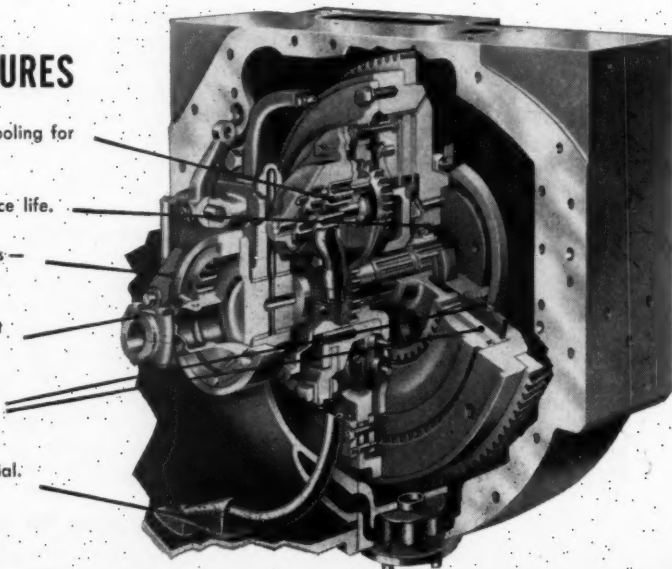
3. A clutch brake helps match clutch and transmission speeds—making shifting easier.

Here, in brief, is how the oil clutch works:

Three metallic-faced plates are separated by oil films at all times except for the last revolution or two as the clutch is engaged. Oil enters the inner diameters of the clutch plates and circulates between them by means of grooves in the clutch facings, carrying away heat and reducing wear. All clutch parts are constantly running in oil.

The exclusive Caterpillar oil clutch is not an "extra"—it is *standard equipment* on the D9, D8, D7 and D6 Tractors, all Traxcavators, on the No. 12 Motor Grader and on the MD6 and MD7 Pipelayers. Yet it is an "extra" in *value* that is unmatched in the industry.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.





# CLUTCH



**CAT D9 TRACTOR:** "We have operated this Cat D9 Tractor for 4,000 hours in the toughest kind of work without any repairs to the oil clutch," says Frank Hill of the Silva & Hill Construction Co., Los Angeles, California. "I just wouldn't consider buying a tractor without it now."



**CAT NO. 955 TRAXCAVATOR:** "In over 4,000 hours on our two hard-working No. 955 Traxcavators, we have made only one simple adjustment on an oil clutch and that took only about a half hour. It's much simpler than the old friction-type clutch," says M. J. Lutz of Bethel Park, Pennsylvania.

## OWNERS REPORT TROUBLE-FREE OPERATION



**CAT NO. 12 MOTOR GRADER:** "Our No. 12 is starting its third season without interruption due to clutch trouble." With only one clutch adjustment in over 2,000 hours, Francis Bloomer, President of the John F. Bloomer Co., Appleton, Wisconsin, says, "We like the No. 12 with the oil clutch." This company, with 35 years of road construction work, owns a fleet of Cat-built equipment consisting of No. 12s, D9, D8s, DW21s.

# CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**LEADER IN  
EARTHMOVING RESEARCH**



One of the eight Mack four-wheel dumpers with 22½ ton capacity operated by Goodfellow Bros., Inc., of Wenatchee, Washington. The Macks have proved so valuable that Goodfellow Bros. have four more on order. These heavy-duty haulers are taking on a . . .

## punishing road job in

Even in temperatures ranging from -15° to 110°, through mud, extreme dust, snow and ice, and on grades of up to 23%—Goodfellow Bros. know that their Macks will perform efficiently, dependably . . . and profitably.

Under such grueling operating conditions, their Mack dumpers showed their capability on the 3,000,000-yard Rocky Reach Dam earth-moving

project on the Columbia River. Then they double-proved it on the Snoqualmie Pass highway construction in Washington's rough mountain country.

Besides providing maximum payloads at minimum hauling costs, the Macks are particularly well accepted by Goodfellow Bros. drivers and shop personnel because of their handling ease, short turning radius and easy accessibility for servicing.

(Advertisement)



Dumping rock on a road-widening operation on Highway #10 in Washington's Cascade Mountains. Prior to this road job, Goodfellow's 22½ ton Macks were used in the 3,000,000 yd. excavation and backfill for the Rocky Reach Dam near Wenatchee, Washington.

## Snoqualmie Pass

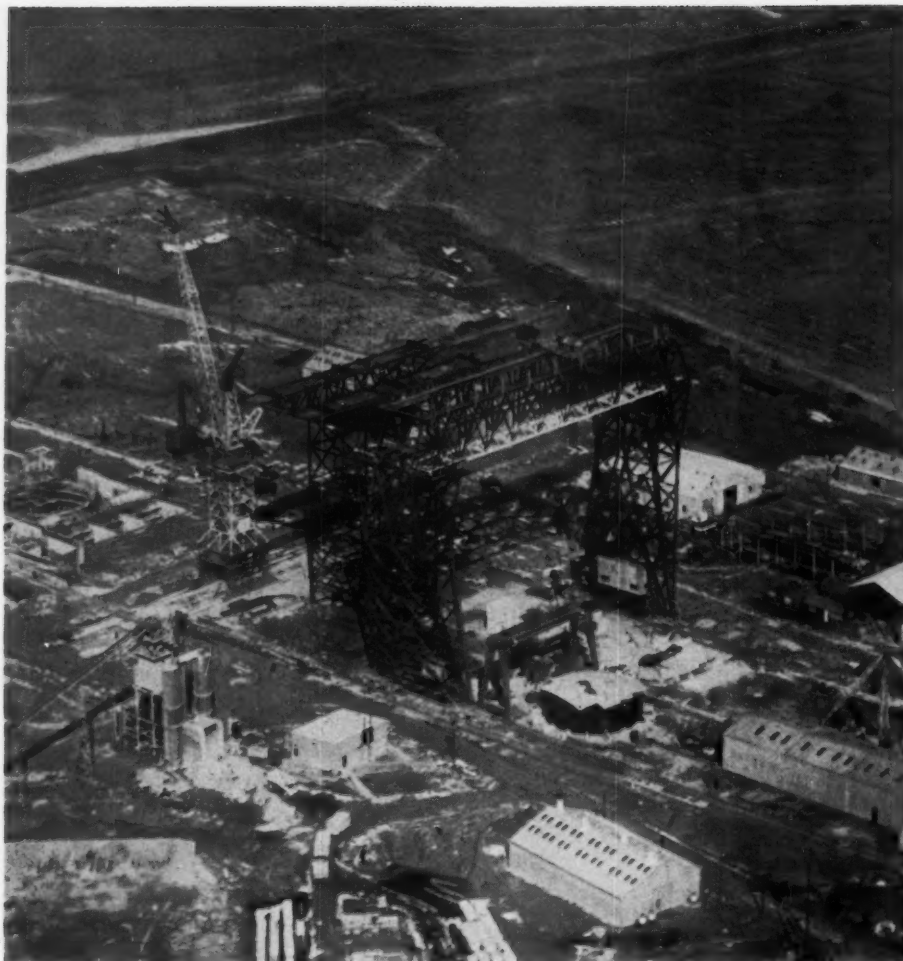
There is a Mack tailored to your construction needs that will provide large-capacity payloads at minimum unit cost. Let your Mack representative show you on-the-job performance proof that—under today's conditions—you can't afford *not* to operate Macks! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

**MACK**  
*first name for*  
**TRUCKS**



"102 fpm laydown speed maintained for"





**A GIANT**—Structural steel gantry measures 178 ft between legs and has a vertical clearance of 140 ft. It straddles the site, riding on 1,200 ft of railroad track.

## Big Gantry Stands 177 Ft High

A GANTRY CRANE that straddles the building it helps erect and lifts loads of up to 200 tons is working on a job at Bradwell-on-Sea in Essex, England.

The job is a commercial nuclear power station for the British Central Electricity Generating Board and consists of two reactor buildings and a turbine house. The crane was built over the course of 14 months by Clyde Crane & Booth, Ltd., to handle both building materials and the huge equipment that will be installed in the buildings, including reactors and boilers.

An overhead trussed-girder type, the gantry is supported on each end by a leg mounted on 8 four-wheel bogies. It measures

178 ft between legs, stands 177 ft high, and has a vertical clearance of 140 ft. The bogies on which the crane rides run on a pair of standard gage railway tracks 1,200 ft long. The machine carries 200 tons dead weight vertically from a main hook and an additional 30 tons from an auxiliary hook.

### All-Electric Power

Crane operations are electrically controlled from an operator's cage that travels with the hoist carriage. A 460-v, 350-kw Crossley diesel generator provides electricity. Eight motors, each rated at 20 hp, provide tractive power. Two 50-hp motors power the main hoist, and another

50-hp motor provides lift for the auxiliary.

Spur-gear hoisting equipment is housed in totally enclosed steel gear boxes with shafts that run on ball and roller bearings. Drums are of steel tube construction, machine grooved, and arranged to coil the hoist rope without overlapping.

Two pairs of driven bogies on each leg move a 200-ton load at a rate of 50 ft per minute. Two 50-hp motors of the auxiliary hoist can lift 30 tons at a rate of 33 ft per minute. The wind load under worst possible working conditions is 5 psf. The normal type crab has two independent hoists mounted on a pair of twin girders.



"102 fpm laydown speed maintained for  
two days of continuous operation"  
(California)

"Mat is the finest  
we've ever seen"  
(California)

"The only paver made that  
could handle our job"  
(Michigan)

"Laid 2225 tons in one 10-hour day"  
(Texas)

**Cedarapids**

Built by  
IOWA

These typical comments tell you why contractors prefer

## CEDARAPIDS BITUMINOUS PAVERS

It's what *paver owners*... not manufacturers... say about their machines that concerns you!

When an experienced contractor tells you he has operated every make on the market, and explains why the Cedarapids Paver was the only one that could handle his job of paving over expansion joints without excessive hand work, you can be sure of handling the toughest jobs successfully.

When an enthusiastic operator shows you how the Cedarapids Paver can roll along at 102 ft. per minute laying a high density mat without tears, voids, or segregation, you know that faster completion of the job permits a lower bid.

When State Highway Inspectors say, "At this high speed, it lays the finest mat we've seen," you're sure of acceptable work on every job.

When a paving contractor tells you his Cedarapids Paver handles the full output of the biggest mixing plant without extending itself to its greatest capacity potential, you know that's profitable production.

Don't take our word about Cedarapids superiority in paver design, construction and performance! Cedarapids Pavers are operating in practically every State... there's sure to be one working near you, so take time to go see it... get the facts from contractors who demand the best in equipment, and get it in Cedarapids Bituminous Pavers.

**Cedarapids**

Built by  
IOWA

**IOWA MANUFACTURING COMPANY**

Cedar Rapids, Iowa, U.S.A.

How one 2½-yd. shovel moves 2,000 yards of hard sandstone, clay and shale a day on Ohio road job

## 5th Manitowoc for Hatcher Bros. Pays Off on Road Building



This Manitowoc Model 3000 shovel equipped with a 2½-yd. bucket has been averaging 2,000 yards of sandstone, shale and clay per 10 hour day working on the rebuilding of Route 39 near Salineville, Ohio. Hatcher Bros. Inc. of Mingo Junction, Ohio is handling all the excavating and grading on the \$417,000 job which calls for the regrading and removal of 117,000 yards of material, containing approximately 33% rock. In addition to the Model 3000, the company also owns two Manitowoc 1½-yd. Model 2000 rigs and two 40-ton Model 2800 Mobile Cranes.

**300,000 Yards of Rock** — Prior to the present operation, the 2½-yd. shovel loaded out 300,000 yards of rock on another Ohio road job. The machine was moved to the present location in only three loads. "On both jobs," says Mr. Jim Smith, Superintendent, "the shovel has given us smooth, uninterrupted performance, with no appreciable downtime. We have never hit a rock formation that the machine could not break up and carry . . . nor have we been halted by a machine failure."

**How You Can Benefit** — Fleet owners like Hatcher Bros. know they can depend on their Manitowoc rigs for consistent, high output performance on any job. Judge for yourself . . . see your distributor soon for full details on any of the eight bonus-capacity Manitowocs.



Manitowoc shovel cuts a 1' x 1' slope through stratified hard sandstone. Thirty per cent of the excavated rock is used as fill.

# Manitowoc

### MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

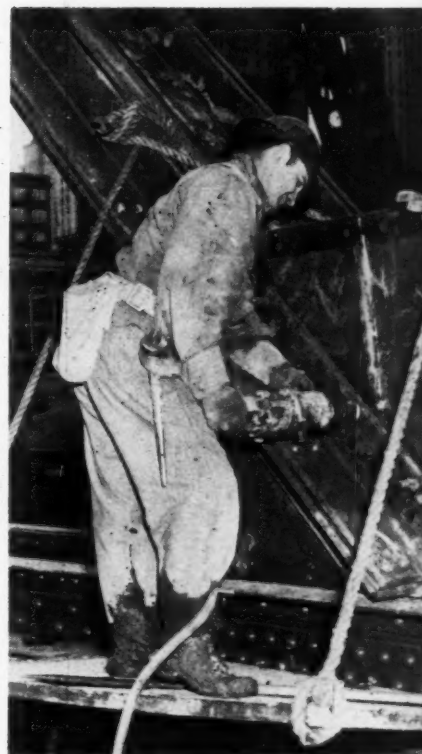
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.





**MAKING CALIBRATION**—Workman tightens a sample nut and bolt against a piece of doughnut-shaped tool steel from which gages measure compression and bolt tension.



**WRENCH AT WORK**—With wrench's air pressure preset, workman tightens bolts.

## Wrench Calibrator Earns Keep

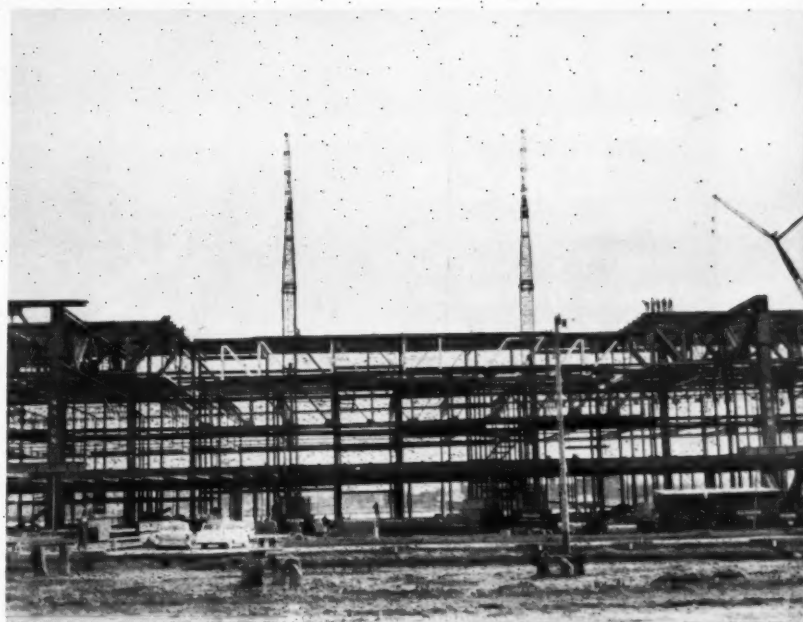
A CONTRACTOR-BUILT impact wrench calibrator is more than earning its keep for a steel contractor putting up the skeleton of a huge convention building on Detroit's waterfront.

The device was developed by R. C. Mahon Co. to calibrate the air wrenches that must bolt field splices and connections on more than 70 steel trusses weighing between 32 and 109 tons under very strict tensile specifications.

Mahon engineers developed the device because they hold a strong disbelief in taking torque checks of the connections. They feel such checks do not directly indicate tension and that readings vary with bolt friction.

They also question the prolonged gage accuracy of conventional hydraulic jack type testers with which their competitor steel erectors calibrate impact wrenches. Besides, they say, many of the units are too heavy to be easily handled on a building's frame.

*continued on next page*



**STEEL ERECTION**—Keystone construction of auditorium roof provides some 400,000 sq ft of columnless area that requires trusses assembled on the job in lengths up to 180 ft.



**RAISING TRUSSES**—Two of the Lima cranes on job lift truss section into position. A third, auxiliary crane pounds 150-lb holding pins into truss ends with wrecker's ball.

#### **WRENCH CALIBRATOR EARNS KEEP... continued**

So Mahon's engineers worked out their own testing unit. It consists of a load cell made from a piece of hardened tool steel shaped like a doughnut that is inserted in a piece of 6-in. channel. The channel, in turn, is firmly attached to convenient fixed structure.

To calibrate a wrench, the contractor takes it and tightens a sample nut and bolt against the doughnut. Four strain gages at right angles to the bolt measure

tension under the bulge of the doughnut—the outer surface of which, under its two holding flanges, is an 8-sided figure.

This set-up forms a Wheatstone bridge from which readings directly can be taken. Workmen, with this quick and convenient method, speedily preset air pressure in each wrench every morning before work begins. All wrench factors, including length of hose, age of the wrench, and ambient temperature automati-

cally are thus accounted for.

All bolts on the job are made to ASTM specification 325 and standard AISC bolt tension tables are referred to for the calibration. The steel doughnut periodically is calibrated on a standard Baldwin machine in Mahon's laboratory.

#### **Savings are Needed**

Because of tough field conditions, the steel erection job is a far from fast operation. This \$50-million convention and exhibit building stands on a reclaimed area near the river. Heavy mud in there proves a severe handicap for cranes handling steel members. These must work and move on heavy mud mats.

And keystone construction of the auditorium roof that will provide some 400,000 sq ft of columnless area requires the use of trusses up to 180 ft long. These have to be trucked to the job in three sections through city streets and assembled on the site. Then, while two Lima cranes lift and hold in place, a wrecker's ball wielded by an auxiliary crane pounds in 150-lb holding pins at each truss end.

## **FOR THE TOUGH JOBS CONTRACTORS PREFER BMCO**

Job: Widening U.S. 81

Location: Bexar County, Texas

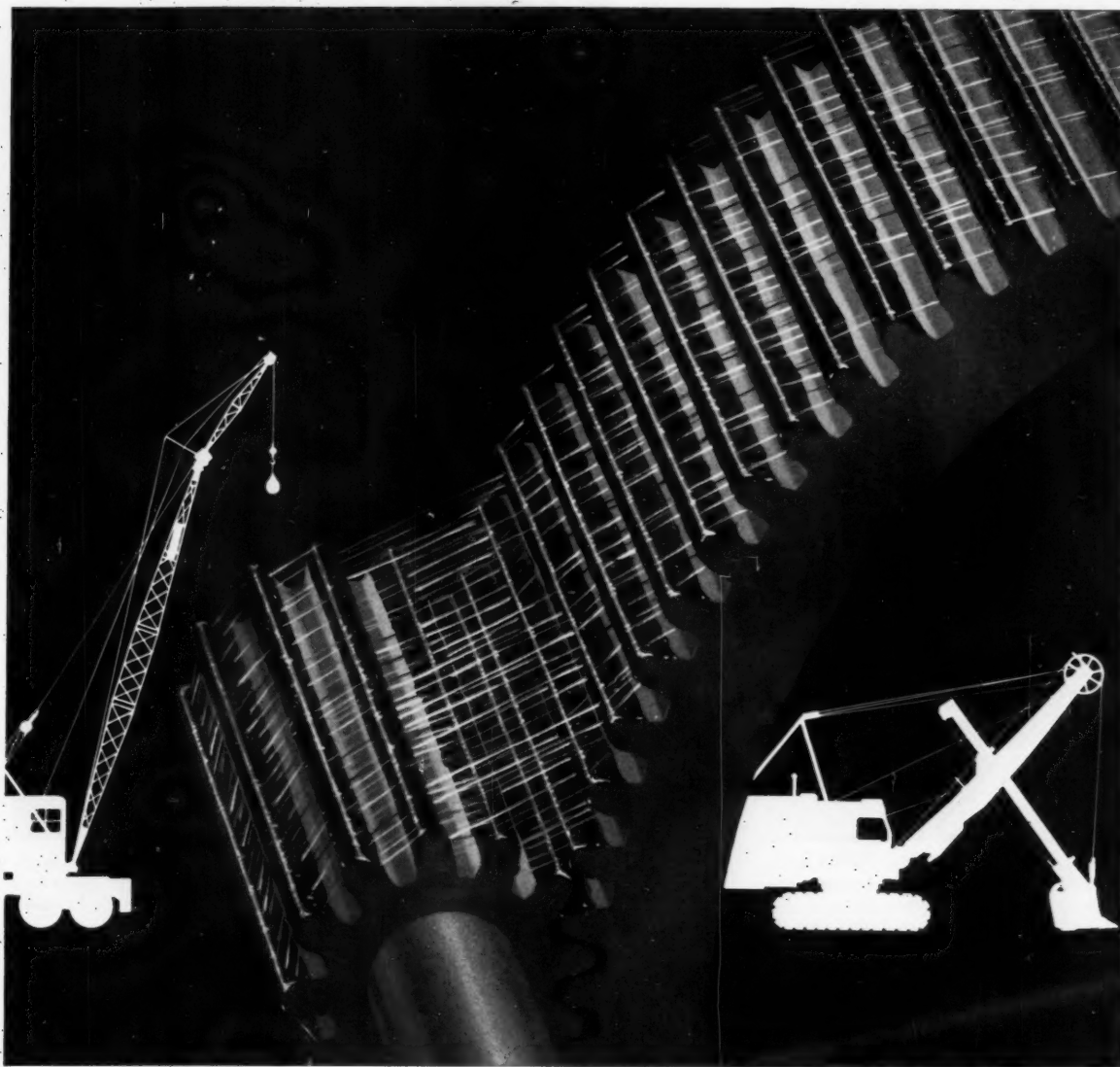
Contractor: Killian-House Co.

BMCO was called upon for the extremely tough job of widening U.S. 81, the greatest traffic street in San Antonio, without stopping the flow of traffic.

**BROWNING MANUFACTURING CO.**

111 HUMBLE AVE. • P.O. BOX 2707  
WALNUT 3-4331 • SAN ANTONIO, TEXAS





## This gear shield stays on the job 2 to 4 times longer!

Surett N is a radically new, super-long-life gear shield and wire rope lubricant. Thanks to a new formulation, it gives protection to exposed machinery never before attained by conventional gear shields. Exceptional tackiness and adhesive qualities make Surett N cling to metal. Rotation of gears lubricated with Surett N creates a dense web of grease strings stretching across tooth surfaces. Result? Any grease displaced by pressure is immediately replaced by Surett N's unique redistribution action.

On-the-job field tests — in rotary kiln gear drives, wire ropes, chains, crushers, construction and quarry equipment, conveyor and shovel parts — have demonstrated Surett N

saves machinery and maintenance time by giving from 2 to 4 times longer periods of operation between grease jobs, and in many uses even longer.

Surett N comes in a wide range of grades for cold or hot application. For less wear and maintenance time, more performance, be sure to specify Surett N. For more information, contact your nearest Esso office in New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, the Carolinas, Tennessee, Arkansas, Louisiana, and the District of Columbia. Or write: Esso Standard Oil Company, 15 West 51st Street, New York 19, N. Y.

# SURETT® N

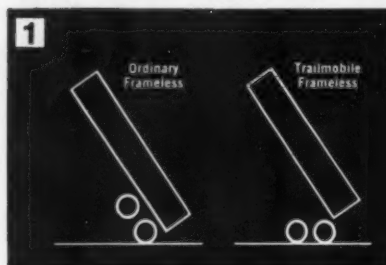


ESSO RESEARCH works wonders with oil

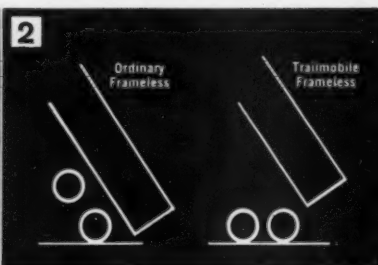


# NEW TRAILMOBILE FRAMELESS DUMP TRAILER

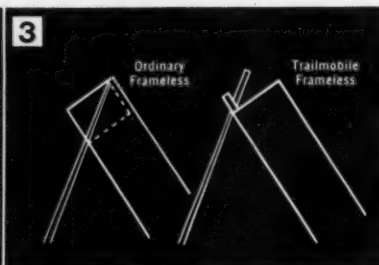
*allows up to 3000 lbs. extra payload • offers five unbeatable features*



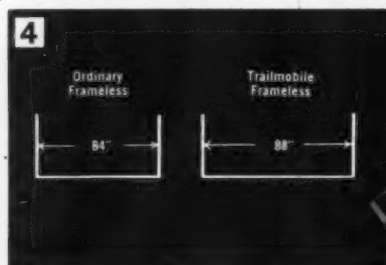
**More stability**—Both axles, all 8 wheels, stay on the ground throughout dumping cycle, whether spreading or stockpiling.



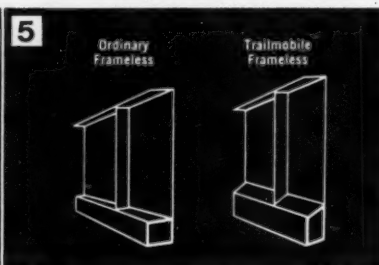
**Better stockpiling**—Spill point remains 43 1/4" high while piling—almost double that of ordinary frameless dumps.



**Extra cube**—Newly patented bail eliminates space consuming doghouse... lowers lift point for added stability.



**More loading capacity**—With a full 88" inside width, you get more payload capacity in a Trailmobile frameless dump trailer.

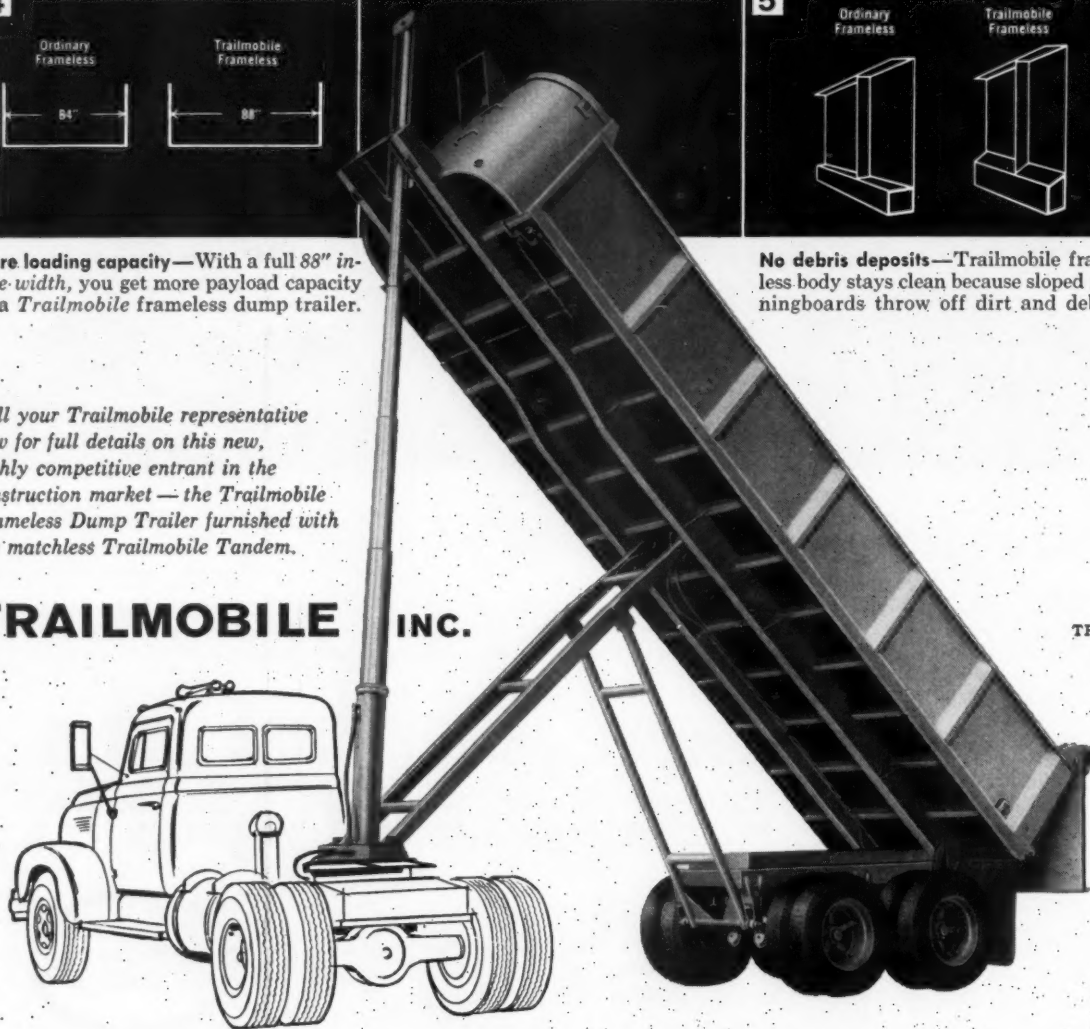


**No debris deposits**—Trailmobile frameless body stays clean because sloped runningboards throw off dirt and debris.

*Call your Trailmobile representative now for full details on this new, highly competitive entrant in the construction market—the Trailmobile Frameless Dump Trailer furnished with the matchless Trailmobile Tandem.*

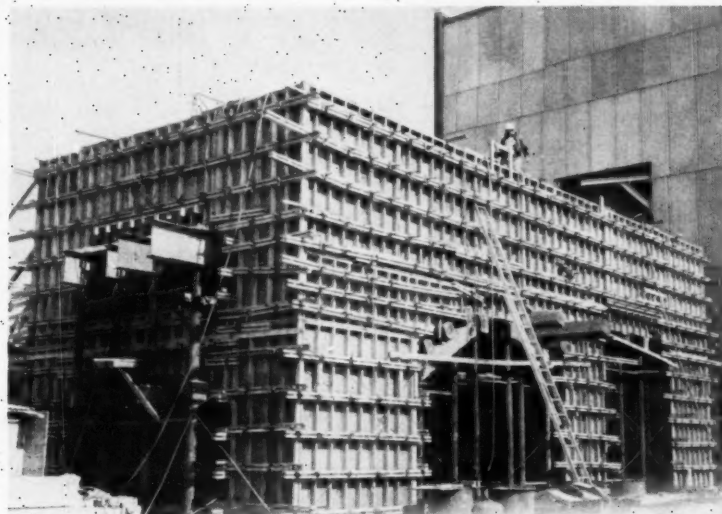
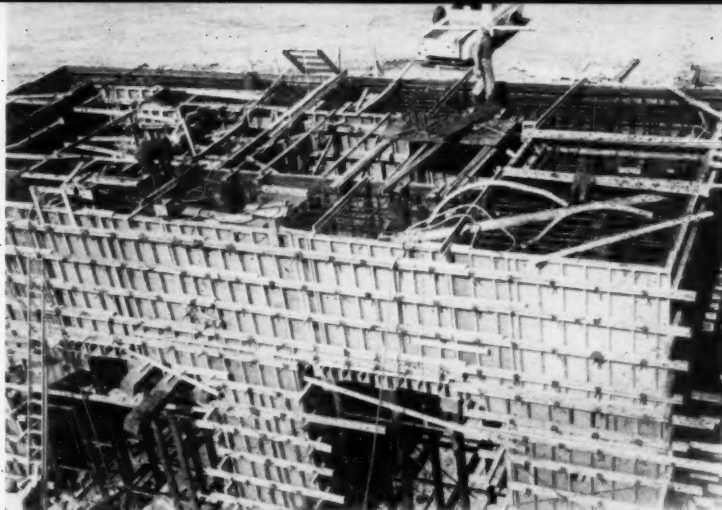
**TRAILMOBILE INC.**

TR-668



CINCINNATI 9, OHIO • LONGVIEW, TEXAS • SPRINGFIELD, MISSOURI • BERKELEY 10, CALIFORNIA

*Veteran carpenter foreman explains Brown & Root's ingenious method of salvaging forms from several jobs, making new panels, then sending them to a new job ready for erection.*



**COMPLEX PEDESTAL**—Panels for this power house pedestal in Haskell, Tex., came to the job all ready to be fitted into place from another job in Waco, miles away.

**TRICKY FORMING**—Superior Tilt-Lock clamps working in conjunction with  $\frac{1}{2}$ -in. threaded rods tie forms to double 2x4-in. wales, while .12x12's on pipe shore soffits.

## Salvaged Forms Work New Jobs

By LLOYD F. GREEN,  
General Carpenter Foreman,  
Brown & Root, Inc.,  
Houston, Tex.

WHAT'S THE BEST and most economical way to reclaim salvaged form lumber from several jobs and put it to work on a new job? That's a problem that troubles many contractors.

We think we have a smart answer to it here at Brown & Root. We convert the lumber into new panels right on the jobs from which they have been stripped. These are designed and built to conform to the forming scheme for a new job getting underway. Moreover, we have a simple and almost foolproof system to show the carpenters how to build the panels and later erect them.

When panels from several jobs rendezvous on the new job, they have only to be fitted into place with little or no field cutting. What's needed to put this system to work? Only a little advanced planning.

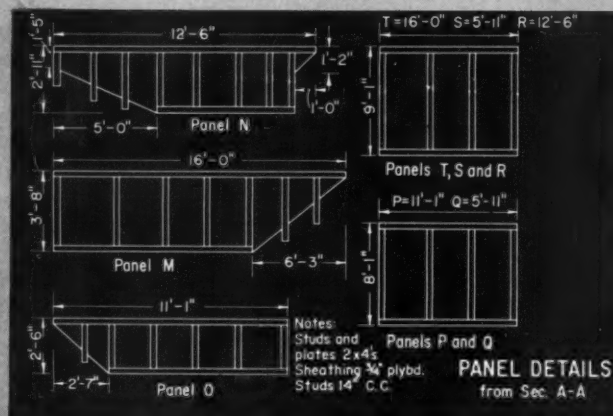
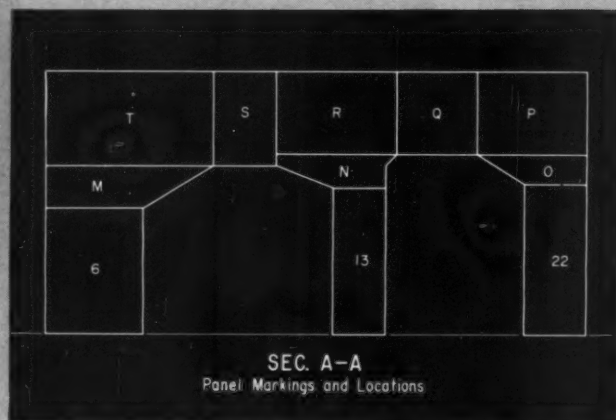
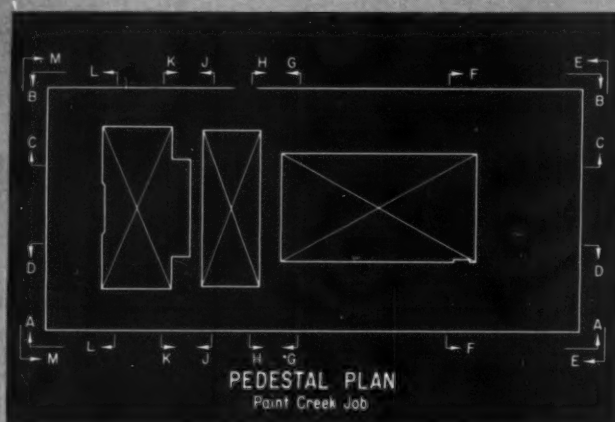
Best way to describe the method is to take, as an example, part of a job B&R now has underway in Haskell, Tex. It's a power plant expansion at the West Texas Utilities Co.'s Pain Creek Station. The plant requires some pretty complex concrete shapes, yet the form panels were prefabricated on other B&R jobs as lumber from them was salvaged.

Key to the operation lies in breaking the new job down into units, then drawing up detailed panel fabrication plans for each unit. For instance, one set of

plans will be drawn for all turbine room concrete; another set for a turbo-generator pedestal; still another for the pump room forms, and so on. Drawings for each unit include a plan view, several sectional views, and panel details with each panel lettered to designate its eventual location. To illustrate, we'll follow the system as it pertained to the pedestal.

This pedestal is a rectangular concrete structure that measures 55 ft long, 24 ft wide, and 7 ft thick. It stands on six concrete piers that measure 5 ft 8 in. x 7 ft 10 in. The structure stands 25 ft high.

One man, Carpenter Superintendent Chester Toungate, designed the forms. He alone was responsible for every panel or



## SALVAGED FORMS...

continued

segment that went into the pedestal's assembly. Important function of this one-man operation was to stop each of the carpenter foremen from using "his method" for fabrication. Since forms for the one job were to come ready to erect from several separated jobs, it was important that no one foreman worked at cross purposes with another.

### Draw Full Plans

Toungate drew up a complete set of form plans for the pedestal. One sheet carried a plan view; several sheets carried sectional views; and several more sheets carried panel details.

The plan—or top view—was not dimensioned. Only section locations were indicated. Toungate indicated as many as he thought would convey a mechanical and visual understanding of the structure to a carpenter foreman on another job who would not necessarily be familiar with the requirements of the Paint Creek job. The pedestal plan showed 12 sectional locations, each lettered.

Each of the 12 views showed panel outlines, their letter designation and their relationship to one another. Again, Toungate employed no dimensions. These sectionalized views primarily were designed to help the erecting foreman while assembly was under way.

Panel details in the final drawings were designed to help the carpenters in building the panels on a distant job. These showed detailed dimensions and construction of panels along with a letter designating its position on the pedestal forming scheme.

The superintendent followed no hard and fast drafting rules for the drawings. Dimensions were taken from working drawings of the design engineer, but the plans weren't necessarily drawn to exact scale. Toungate pencilled them onto sheets of columnar pad to approximate scale. He then arranged the drawings in logical order and stapled them to a protective folder. He put together some 55 sheets containing 98 drawings for the pedestal in about 8 working hours while on another job. And this included shoring plans.

The folder of drawings then was sent to a job in Waco some



## ROUGH GROUND DOESN'T STOP THIS RUBBER-TIRE EXCAVATOR!

### How **LORAIN SP-107** licks off-the-highway travel:

- Oscillating, spring-mounted front axle
- Hugs the ground for maximum traction
- No hang-up . . . no wheel spin
- Powerful, 4-wheel drive



Until now, Self-Propelled, rubber-tire shovel-cranes were restricted pretty much to smooth, hard-ground travel. Now, the 3/8-yd. Lorain SP-107 is available—to move right in over the rough, soft-ground conditions that exist off-the-highway on most hoe, shovel and dragline jobs.

Lorain put a powerful, 4-wheel drive carrier under the hydraulic-controlled turntable and then added an oscillating, spring-mounted front axle. Result? Vastly improved off-the-highway travel. Front wheels hug the ground and the 4-wheel drive carries the SP-107 where self-propelled machines could not go before . . . hang-up and wheel spin are no problems.

Where *maximum* lifting capacity is needed, the front spring action can be quickly "locked out" to give solid axle, full 7-ton crane capacity over front, rear or sides, without setting out-riggers.

This "go anywhere" rubber-tire shovel-crane combines mobility, maneuverability and tractive power to get in to the job . . . get it done in a hurry . . . and get out fast . . . to hustle down street or highway to the next job.

There is more you should know about the SP-107 . . . features such as: fast, easy-acting hydraulic clutch controls; the optional 4-wheel steering; the exclusive, lighter, yet stronger, square-tubular-chord crane boom. And best of all, the surprisingly low cost for such Lorain quality.

See your Thew-Lorain Distributor . . . and check, too, the on-the-spot parts and service facilities that are such plus values when you buy Lorain!



*Notice how wheels on the oscillating, spring-mounted front axle of the SP-107 hug the rough terrain . . . keep powerful, 4-wheel traction at work.*

The Thew Shovel Co., Lorain, Ohio, U.S.A.

**THE W  
LORAIN®**  
RELIABILITY IN ACTION

**SP-107**

## SALVAGED FORMS...

continued

distance away where form lumber was being stripped. There carpenters took the salvaged lumber and fabricated it into panels designated for the pedestal. Carpenters worked in pairs on panels assigned them. They knew nothing of the over-all scheme of the Paint Creek job. When a pair of carpenters finished the panels shown on a detail sheet, they lettered the panels and initialed the drawing. Then the forms were trucked over to the Paint Creek job.

Panels for other parts of the job also were trucked in ready for erection from other jobs. When work was ready to begin, erection carpenters had only to refer to the lettered drawings and set the panels as designated. No panel had to be field cut. Only field-built parts cut for the pedestal forms were haunches and sloped soffits. But even some of these were precut.

Engineers insisted that the pedestal contain no construction joints. That meant that forms for the entire pedestal had to be set before concrete could be poured. Forms were 3/4-in. plywood sheets backed by 2x4-in. wood studs.

Carpenters cross braced forms with 1/2-in. reinforcing rods to which turnbuckles had been welded. Anchoring devices previously had been placed in the pedestal pad. Superior Tilt-Lock clamps working in conjunction with 1/2-in. threaded rods tied the forms to double 2x4 horizontal wales. Shoring for soffits consisted of 12x12-in. timbers bridged over 6-in. pipe.

Forms for the water intake house, turbine room, and other units of the power plant followed the same schedule of erection. All came from widely scattered jobs, ready to erect. Most were on the job even before excavation was completed. Plans now are in the making for use of salvageable material on other jobs. R. R. Yazell was project superintendent, and C. F. (Jeff) Hardy, regional superintendent for all Brown & Root power plant construction. The writer was general carpenter foreman.

Sargent & Lundy of Chicago were design engineers while J. N. Green of Abilene, Tex., was supervising engineer for West Texas Utilities Co.



Approximately 40 sections of Thermoid Powerflex Hose, ranging from 15' to 12' in length, and from 3/4" to 1 1/2" in diameter are used on this Oliver Super 88 Diesel Tractor equipped with a Ware Hydra-Trencher.

## Hose that's built to take it!

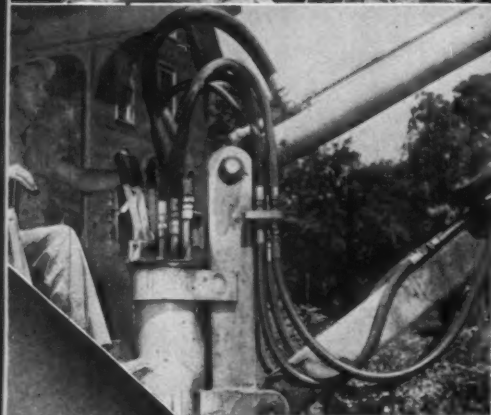
On a recent sewer installation, Lehigh Foundation, Inc., Dresher, Pa., dug 40,000 feet of trench. According to Mr. Douglas Sammak, President: "We dug this trench eight hours a day, five days a week on hard ground conditions, and we have over 2,000 hours registered on the machine. The Thermoid Powerflex Hose stood up under terrific punishment on this job."

Take a leaf from Mr. Sammak's book. You, too, will find that using Thermoid Powerflex Hose helps you keep maintenance costs and downtime to a minimum... your operations moving on schedule.

Your local Thermoid Distributor can help you select the hose best suited to your needs.



Thermoid Company  
Trenton, New Jersey  
Nephi, Utah



Cut costs with Thermoid Conveyor Belts



... and Thermoid Multi-V Belts





## How Dodge saves you money by matching your truck to your needs

Dodge medium- and heavy-duty trucks have always been built from a wide range of "Job-Rated" components to match a truck exactly to your job. This means that you aren't forced to pay for capacity you don't need, and you don't get under-sized units that shorten your truck's life. Just look at the range of components today's line of *Power Giants* offers:

**In power,** there are Sixes from 125 to 141 hp., Power-Dome V-8's from 204 to 234 hp. Exclusive Power-Dome V-8 design reduces harmful carbon deposits, greatly reducing the need for engine overhauls to maintain maximum power.

**In payload,** numerous Dodge medium- and heavy-duty models offer G.V.W.'s from 11,000 to 46,000 lbs., G.C.W.'s from 30,000 to 65,000 lbs. in gradual

steps. A wide range of "Job-Rated" axles, transmissions, tires, springs and other components makes possible gradual increases in capacity and assures you a dependable, economical truck because it fits your job exactly.

**In economy,** Dodge provides the thriftiest and most efficient engine and transmission combinations. A range of eight engines and eight transmissions, including automatic Torqmatic, makes this possible. You save on gasoline, too, because Dodge engines operate efficiently on regular gasoline!

Priced competitively throughout the line, in many models Dodge is priced *lowest!* No matter what Dodge *Power Giant* your job calls for, you'll be agreeably surprised at its thrifty price tag. See your Dodge dealer soon, and get his special 40th-Anniversary deal!

# DODGE *Power Giants*





**A PRACTICAL "IVORY TOWER"**—Professional superintendents seated around table take written quiz after an all-day study session at a Short Course for Highway Superintendents co-sponsored by Ohio State University and the Ohio Contractors Association.

## Supers Go Back to School

"NOW IF I TELL a man, in a nice way, to move his fanny a little faster, he just isn't going to move it any faster," said one man, slapping his hand down hard on the table.

"What makes you say that?" asked another.

"The average construction stiff just won't take you seriously unless you bark at him," said the first.

"Well, I don't buy that," said a third. "Get the reason for an order across to a man and you won't have to bark at him."

"Baloney!" the first retorted. "That'll get you a bunch of contented men but will you ever get your road built?"

"Why not—?" began a fourth, and so the discussion continued on. The men speaking formed part of a 40-man group seated around a classroom arguing the

question of how best to handle a workman. That argument, along with others, formed part of a unique experiment in Ohio road-building history.

Sponsors of the experiment—Ohio State University and nearly every roadbuilder in the state—call it a Short Course for Highway Superintendents. Basically, it's a school designed to help the construction supervisor keep abreast of developments in safe and efficient highway practices. But the school also serves as a forum whereby supervisors exchange ideas that will help them in their work and, in turn, help the contractors for whom they work.

Schools for superintendents are rare—but not new. Two reasons make this one unique. First, the school represents a collective effort on the part of Ohio contrac-

tors to improve their operations and methods as a state-wide industry.

They do this by footing most of the cost of the school. Contractors not only select men who will attend the sessions, keep them on salary while they attend, but also pay full tuition and living expenses for the sponsored students. (Many contractors themselves attend.) They also contribute key men as instructors despite the risk of revealing normally closely-guarded company techniques.

"We figure we'll stay competitive on a management level," explains one contractor. "Standardizing field practices figures to help us all without hurting us competitively."

The school, secondly, represents a definite attempt by the contractors to make a practical working team of hard-boiled field



**Big loading capacity, too!**  
Front-end loader for International W 450 tractor handles  $\frac{3}{4}$  cu yd material bucket, lifts 2,500 pounds.

## There's a full $\frac{1}{2}$ cu yd in that backhoe bucket!

The big, brawny International W 450 tractor gives you backhoe capacity approaching that of small power shovels, with wheel tractor economy and mobility . . . PLUS front-end loader or dozer, all in one unit!

The 60 hp\* International W 450 tractor has the built-in weight and strength to handle an International Pippin backhoe with  $\frac{1}{2}$  cu yd heaped bucket capacity. At a modest increase in investment over smaller, lighter tractors, you can practically *double* dirt moving capacity for trenching, footings and basement excavations. For fast loading, the regular backhoe bucket can be replaced by an 8 cu ft shovel bucket.

\*Net flywheel hp with engine accessories installed.

Your nearby IH Dealer can match your tractor-backhoe-loader needs exactly from four tractor power sizes, 40 to 68 engine hp, with matching International Pippin and International Wagner backhoes and loaders. Phone him for a demonstration!



**Now! "central station" electric power on wheels!** The International W 450 may be equipped with Electrall®, mounted as shown in red. Electrall powers any equipment normally operated from a 5 to 7½ kva high-line transformer. Trailing Electrall can be pto-operated by any tractor of 30 hp or larger.

### FOR MORE INFORMATION . . .

International Harvester Company,  
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Chicago 80, Illinois

Please send me information on:

- ☐ 40 hp 330 Utility tractor
- ☐ 50 hp 330 Utility tractor
- ☐ 60 hp W 450 tractor

- ☐ International Electrall
- ☐ International Wagner loaders, backhoes
- ☐ International Pippin loaders, backhoes

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

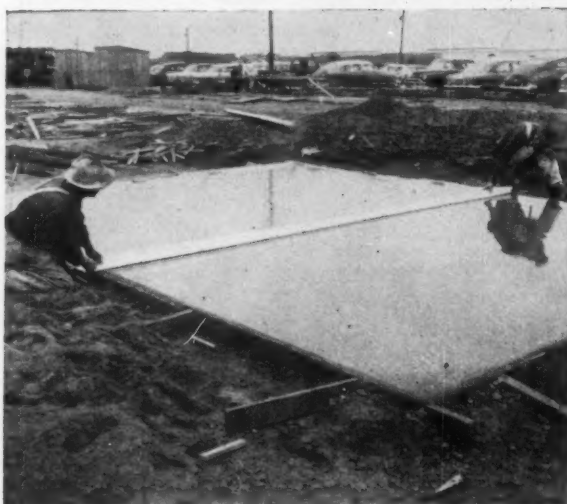
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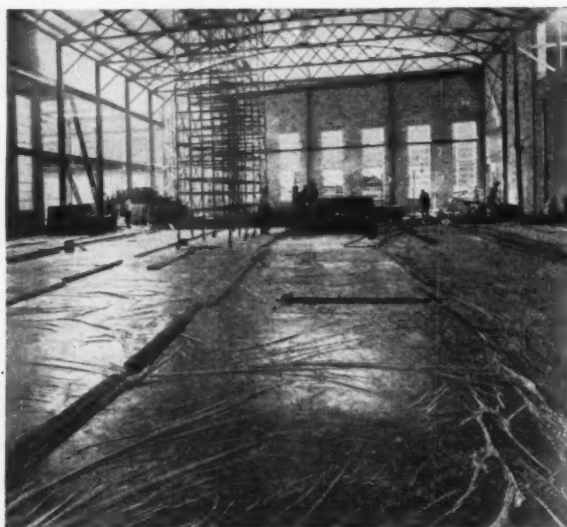
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**INTERNATIONAL  
HARVESTER DEALER**

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Farm Tractors and Equipment . . . Twine . . . Commercial  
Wheel Tractors . . . Motor Trucks . . . Construction Equipment—  
General Office, Chicago, Ill., Illinois.

# A BETTER CURE FOR CONCRETE PROBLEMS



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## SUPERS GO BACK TO SCHOOL... continued

knowledge and so-called "ivory-tower" theory. Hence, the joint sponsorship by the university and the Ohio Contractors Association. Prominent industry leaders also help by contributing their services as lecturers.

How does the contractor hope to benefit by this effort? Tall, affable director of the school, Emmett H. Karrer, professor of Highway Engineering at the university, explains it this way:

"A contractor's main purpose for being in business is to make a profit. To insure this profit he must have an efficient field operation. Modern highway construction methods and new developments in machinery place enormous responsibilities on a construction supervisor. No one contractor can give the supervisor all that up to date knowledge so the contractors collectively will try to do it. And they're all doing it because they expect it will benefit them in the end."

How will the university benefit from the venture?

"This combined theory and field practice type course," Karrer says, "will add to the knowledge we will be able to give our undergraduate engineering students. They'll leave the university with a more realistic knowledge of what the business is all about and so be able to more rapidly take their place in the industry."

A full course runs for five intense days. Cost to each student—paid by himself or his sponsor—is \$60 for tuition, books, and other fees. Students must be in residence during the course. Most live in hotels in Columbus at their own or their sponsors' expense.

School starts out with a Sunday, 3-hr evening session in a Columbus hotel. During this get-acquainted session, superintendents from the many roadbuilding contracting firms throughout the state meet with the people who will instruct them and with one another.

### Monday

Actual classroom study begins at 9 am the following morning. At that time, Charles E. McKee, of the Ohio Contractors Association, opens the school by outlining its purpose to the students. Professor Karrer then describes the organization of the course and hands out notebooks and the text

(Peurifoy's "Construction Planning, Equipment, and Methods," McGraw-Hill Publishing Co.). Sessions then get underway.

M. J. Jucius, professor of business organization at the university, delivers a talk on what supervision is and how it works. He is followed by Charles Frysinger, president of OCA, and Howard Craig, Chief Engineer, Bureau of Construction, Ohio Department of Highways, who discusses the responsibility of the supervisor to

the contractor and the responsibility of the supervisor to the owner. Vern Holderman, president of V. N. Holderman & Sons Co., closes the morning session with a talk on organizing a job for smooth operations.

The class breaks for lunch then returns for an afternoon session on employee and human relations. L. R. Young, sociology professor, begins that session with an analysis of what impels people to work as they do. He is followed

# 4 in 1

# 3 in 1

# 2 in 1

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## SUPERS GO BACK TO SCHOOL... continued

by W. B. Logan, professor of education, who explains the relative values of oral and written communication of orders. Finally, Richard Tangeman of W. L. Johnson Construction Co., suggests the best methods for hiring and instructing new employees. The day's sessions end with a round-table discussion in which the day's talks are analyzed and questions are asked of the instructors.

### Tuesday

Tuesday morning starts off with a written quiz on the previous day's work. The quiz is followed by a panel discussion between Ralph Parrot, Ralph Heffner, Ralph Beerbower, and Vern L. Stauffer, all contractor representatives on the techniques of training new equipment operators, labor regulations and relations, labor agreements, ways to handle union delegates, and prevailing wages on public contracts.

The afternoon session concentrates on safety. Wayne Christianson, Ohio State Industrial

Commissioner, analyses what causes accidents, the value of first aid on the job, and uninsured hazards. Following a question and answer period, Doug Criswell of the Johnson Company speaks on good job housekeeping as an aid to safety. A. P. Harness of the Ohio Contractors Association concludes the afternoon with a discussion of the accomplishments of "Joe Safety." A workshop discussion ends the day.

### Wednesday

A written quiz based on the previous day's work starts off the Wednesday morning session. The quiz is followed by a class devoted to plans and specifications.

C. R. Hanes of the Ohio Department of Highways starts things off by outlining the responsibilities of the superintendent in the interpretation of plans. He is followed by Tom Plummer, Holderman's chief engineer, who concentrates his talk on specification interpretation, supplemental specs, and special specs. That

afternoon, Bill Church, also of the Holderman organization, discusses the problems of field engineering with emphasis on centerline control, cross section control, slope control, trenching, ditching, culvert layout, and pavement surface control. Again, a round-table discussion closes the day.

### Thursday

The regular quiz starts the day, then the class goes into a long session on applied engineering fundamentals. Excavation and embankment compaction are discussed by R. F. Baker, Professor of Engineering. Prof. Baker examines the problems of shrinkage and swell, maintaining moisture content, and when to start and stop rolling subbase.

George McCord of the Portland Cement Association discusses the problems of concrete pavement construction and is followed by Barney Jones of the Asphalt Institute who discusses asphalt paving.

Most of the afternoon is taken up with the manning and care of

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CM&E 8/58

# A "Subway" For Natural Gas Is Constructed In The Dry 20 Feet Below The Rio Grande



To insure a continuous flow of gas and to provide for increased capacity, two pipelines, 25' apart, were installed in the ditch shown.

**Owner:** Texas Eastern Transmission Corp., Shreveport, Louisiana

**Contractor:** H. B. Zachry Company, San Antonio, Texas

For the first time in history, natural gas from Mexico travels to the United States through two 20-inch pipelines buried deep below the bed of the Rio Grande near Hidalgo, Texas.

To construct this unusual river crossing, the river was first diverted and a by-pass built around the construction site. MORETRENCH WELL-POINT EQUIPMENT, installed in successive

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## SUPERS GO BACK TO SCHOOL... continued

construction equipment. The cost of equipment when in use and when idle is discussed by William Early of the Columbus Equipment Co. He is followed by Prof. Karrer who talks on how to measure the possible production of a job in terms of lost time and working conditions. The afternoon session closes with a talk by E. E. Kornya of the Sinclair Refining Co., and Kermit M. Elder of Elder & Epler, Inc., on the care and maintenance of equipment,

lubrication and tire care.

### Friday

The last day of school begins with a final written quiz and a morning session devoted to job planning and management. George Driscoll of H&S Contracting Co. tells how to prepare a construction schedule and an equipment-use schedule.

Wally Yamarick of C. F. Repple Co. talks on the best meth-

ods to order materials. He is followed by Robert Holderman, also of the Holderman Co., who talks on efficient field and office practice. Charles E. McKee of OCA concludes the school with a discussion on public relations.

At noon, a graduation luncheon presided over by Frysinger is held, attended by teachers, students, and contractors. At this luncheon students are presented with completion certificates.

How the school came into being is interesting. Germ for the idea came in 1952 when Vern Holderman, a dedicated and respected Ohio roadbuilder, started a superintendent's school within his own company. Company executives and top-ranking supervisory personnel served as instructors. The school and its effectiveness gained considerable respect throughout the state.

Last year, during a meeting of the Ohio Contractors Association, Prof. Karrer got together with Holderman and dreamed up the short school for superintendents that would bring all the state contractors as well as the university into the act. Karrer and Holderman, along with other contractors, worked out a course of study.

Using Holderman's school as a guide, Karrer devised a one-week course of 33 hr of instruction. Karrer directs the school.

A firm believer in continued education, Karrer has an amazing background. Before joining Ohio State he spent 17 years with the Ohio Bureau of Public Roads and has been a consultant to the Ohio Contractors Association as well as vice president of the Educational Division of the American Roadbuilders Association.

"Teachers generally are regarded as ivory-tower boys who think only in idealistic terms," he says. "But I keep active in contractor activities because I'm convinced that there's little I can give my regular undergraduate students theory-wise if I can't show them how contractors put that theory to work."

Karrer feels the contractors benefit, too.

"Contractors generally are regarded as hard-headed businessmen who think little of theory. But their interest in the school certainly demonstrates they recognize the value of theory and that it's necessary to continued profitable operations."

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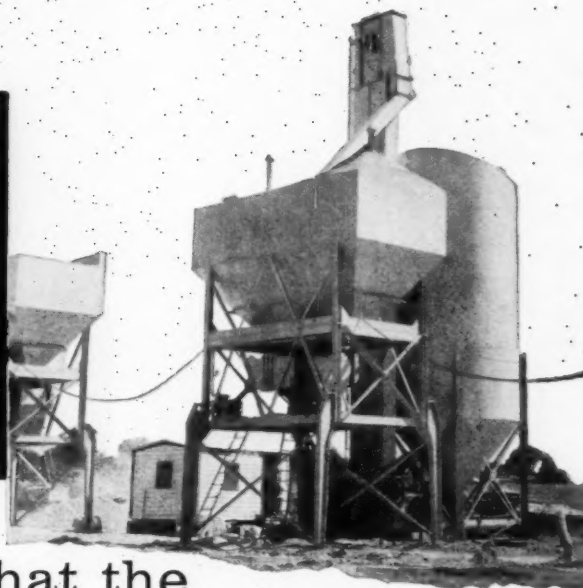
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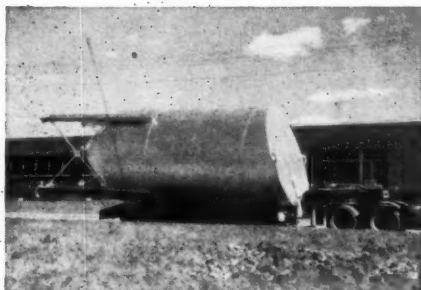
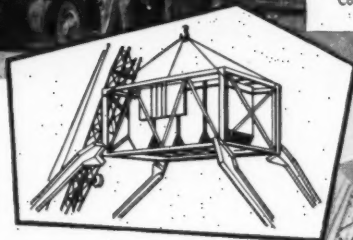


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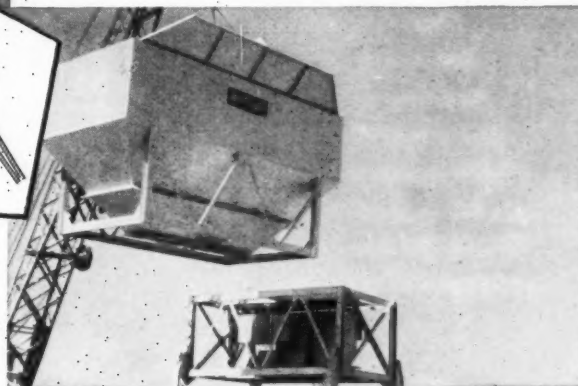
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Reserve cement bin ships as a complete unit with legs in-place.



Complete bin swings into place,  
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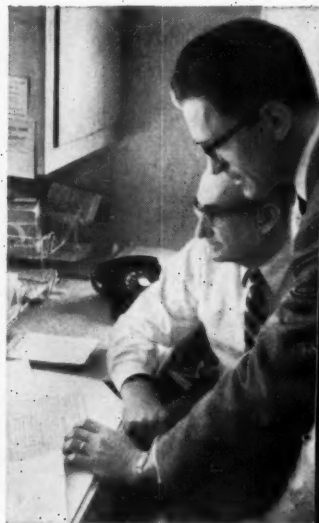
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Jack Hartrick (left) and Chuck Daub (right) go over lubrication and fuel deliveries with W. D. Dillon, one of the joint venture project principals. Chuck Daub is a Standard lubrication engineer. Like Hartrick, Daub has an engineering degree plus special training for this work.

## STANDARD OIL service helped this contractor on the Illinois Toll Highway

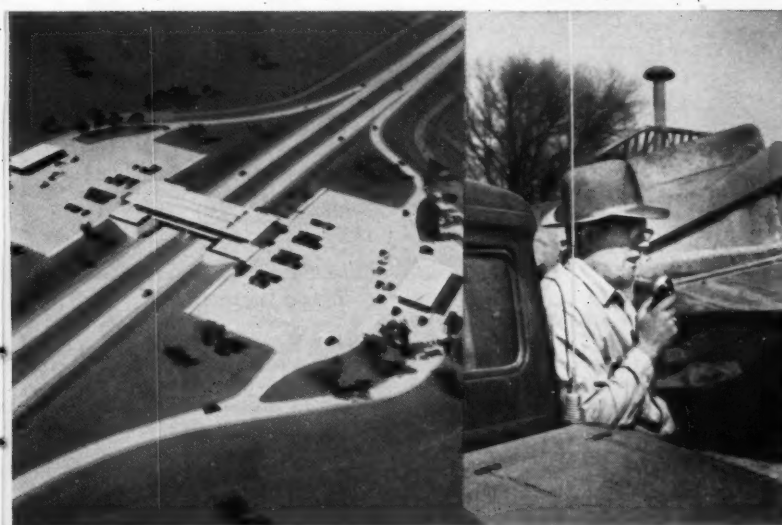
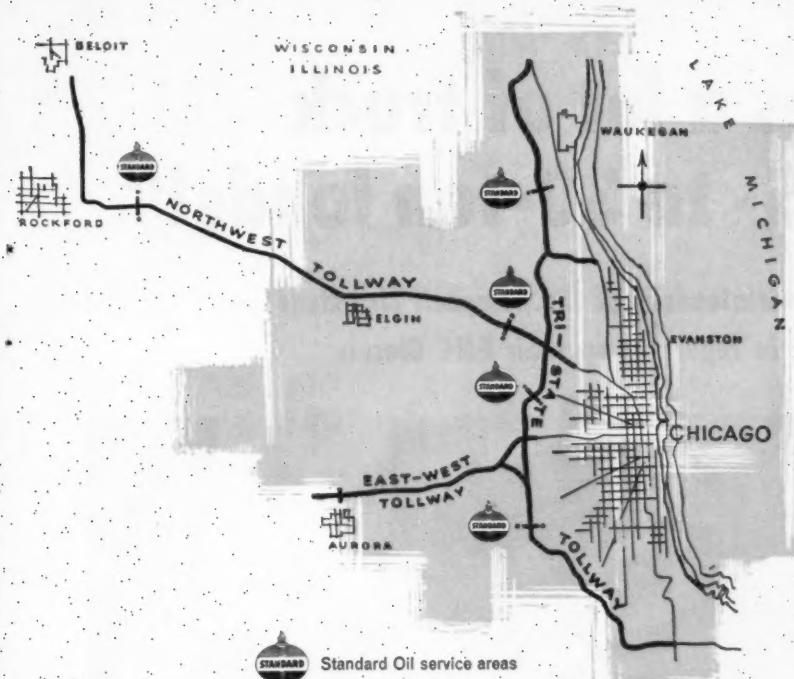
*McCarthy-Mass-Dillon  
learn about Standard Oil  
service while building an  
\$11-million segment of  
the Illinois Toll Highway*



John Peters, purchasing agent and office manager, goes over order for supplies with Jack Hartrick. In addition to experience and training for working with contractors on jobs like this, Jack has completed the Standard Oil Sales Engineering School.







Model of Standard Oil service plaza on Illinois Tollway. Five such units will provide service from both sides of the highway. Air conditioned, over-the-roadway restaurant will give guests an interesting view of the Tollway.

Getting the message. Howard Leonard talks to headquarters from site of Tollway interchange with Highway 31. Leonard supervises more than 150 pieces of equipment on the job—all of it lubricated by Standard Oil products.

You expect more from **STANDARD** and get it!



When McCarthy-Mass-Dillon was awarded the contract for 17.2 miles of the Illinois Tollway west of the Fox River, they contracted with Standard Oil for petroleum products. Here's what happened:

1. Jack Hartrick, a Standard Oil lubrication specialist with a degree in engineering and 11 years' selling experience with Standard, was assigned to the project. He surveyed equipment and recommended lubricating oils, greases and fuels.

2. Products able to provide lubrication over a wide range of applications plus competent recommendations by a man trained for this work resulted in the contractor having to maintain only a minimum investment in inventories. Storage and application facilities were likewise kept to a minimum.

3. Motor oil, diesel fuel and gasoline were delivered to the site from supply stations at Huntley and Rochelle, each of which is only a few miles away.

Both facilities were on call 24 hours a day. Equipment was never idle for lack of supplies of petroleum products.

This kind of service added up to money saved for the contractor. You can get this kind of service on your construction job anywhere in the 15 Midwest and Rocky Mountain states serviced by Standard. Find out how. Call the Standard Oil office nearest you. Or write **Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.**

Two motor oils, three greases and two fuels make up most of the inventory of petroleum products on the McCarthy-Mass-Dillon job. Here's the list:

- STANOLUBE HD-M Motor Oil**
- STANOLUBE Series 3 Motor Oil**
- RYKON Grease**
- AMOCO Lithium Multi-Purpose Grease**
- CALUMET Viscous Lubricant**
- STANOLIND Diesel Fuel**
- STANDARD RED CROWN Gasoline**

**STANDARD Asphalt** is used by the contractor on all shoulder construction.

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— says W. B. Couch, superintendent of the Campbell Limestone Co.,  
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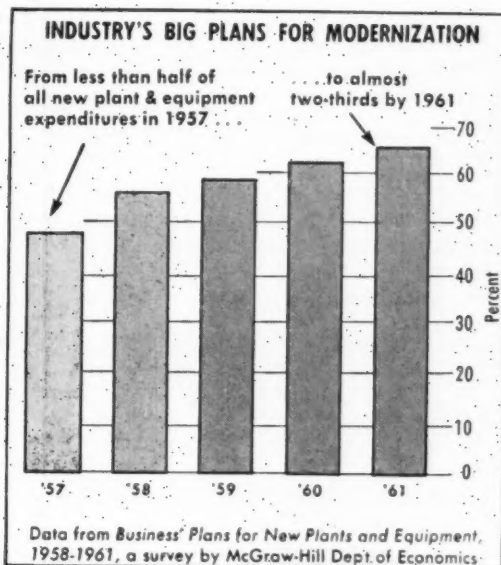
EVEN CLIMBING THE STEEP RAMPS with their huge loads is easy for these GMC's. They've got the power reserve to keep rolling where other trucks can't make the grade. You can thank those high-torque 2-cycle Diesels for that!

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# Modernize Now — For Growth and Profits

The biggest challenge facing American industry today is that of thoroughly modernizing its plant and equipment. This is the test period for companies to prepare for success — or failure — in the '60s. Success depends decisively on one key policy — modernization, for growth and profits.



The problem of business recession is fading. Sales and industrial production are moving up again, slowly. Business is swinging back into its normal course. This is growth, not retreat and recession. If the recovery takes us back to the normal growth trend, industrial production will be up 15% to 20% by 1960.

But how can we get this growth in production without the plague of price inflation that has blighted our economy in recent years? And, of fateful consequence for the individual business firm, how can it keep its costs down enough to make a decent profit — something a very large share of American companies are not doing today?

This is the new challenge that confronts business as the recession is left behind.

## Nature of the Challenge

The recent record on costs and productivity is not reassuring. Since 1947 wages in manufacturing have risen 68%, while output per manhour has gone up 32%. This is a dismal record for a nation that has prided itself on



gains in industrial efficiency. Clearly, if we are to avoid continuing inflation, labor must key its wage demands more closely to productivity increases. But clearly, also, we must do far better in raising output per manhour. Otherwise, industry cannot hope to offer stable prices, and still make a profit.

**What, then, is the answer? It is modernization of plant and equipment, the replacement of obsolete producing facilities with new and more efficient machinery and buildings.** Only in this way can industry hope to increase production, hold down costs and make a good profit showing in the years of growth that lie ahead.

### Industry's Answer

The chart on the preceding page shows how American industry is buckling down to the task of modernizing its facilities over the next four years. It is planning to replace old equipment with new machines that will raise output per worker not just 2% or 3% a year, but more like the 5% annual gain in productivity that this nation achieved in the years following World War I.

Since World War II we have had to contend with shortages of capacity and materials that have held back the job of raising productivity. But today the machines and techniques are available. And industry is getting set.

A broad sample of manufacturing companies surveyed by the McGraw-Hill Department of Economics earlier this year reported these plans: **In 1958, expenditures for modernization will rise to 56% of total investment in new facilities — compared to 48% in 1957. And this emphasis will increase until by 1961, expenditures for replacement and modernization account for two-thirds of all capital spending by manufacturing companies.** In dollar terms, manufacturers will spend more on modernization in each of the four years 1958-61 than in any previous year except 1957.

### Can It Be Done?

These are big plans. Can they be carried out? Is it too visionary to hope that after a decade of expansion, industry can now find the outlets for huge amounts of capital investment in the area of modernization? The answers are important to business and the nation, because on this new wave of modernization depends our hope of holding down costs and prices, and also the prosperity of the vital capital goods industries — generators of boom and bust in our economy.

To ensure that industry gets the answers, McGraw-Hill's 34 business publications are now starting a coordinated effort — the largest editorial effort in the history of our company — to find, report and publish the opportunities for modernization at a profit, in the fields we serve. These special reports will begin in late September and will run through November, with appropriate coverage for the specific needs of each field. We are proud to share with industry the responsibility for making sure that no opportunity is overlooked in the drive to modernize now for growth and profits.

*This message was prepared by the McGraw-Hill Department of Economics as the first step in our company-wide effort to report on opportunities for modernization in industry. The Department is also preparing a longer report, on modernization as a national problem, for publication in October.*

*Permission is freely extended to newspapers, groups or individuals to quote or reprint all parts of the present text.*

*Donald C. McGraw*  
PRESIDENT

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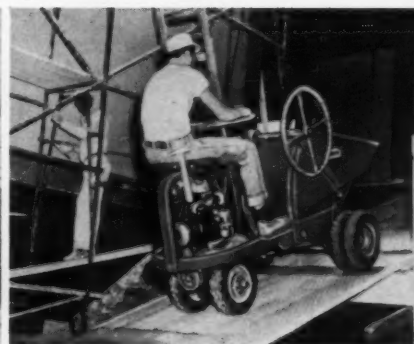
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# Construction Men in the News...

## Contractor Receives Honorary Law Degree

FRED J. DRISCOLL, president of the George F. Driscoll Co., New York general contractor, now holds an honorary Doctor of Laws degree from Fordham University. The school conferred the degree on Driscoll and New York Governor Averell Harriman at its 113th commencement exercise. Cardinal Spellman, Archbishop of New York, made the presentations.

Part of the Fordham citation that accompanied the degree termed the contractor "... a man whose record for ability and integrity as a builder has won him a secure place in the confidence of government, business, and labor..." This is the second such degree for Driscoll. His first was awarded him by Boston College in 1955.



## George A. Fuller Co.



JAMES B. TAYLOR, JR., is a new vice president of the George A. Fuller Co., of New York.

Taylor joined the building firm in 1940 as superintendent of construction on the Naval Air Base, Quonset Point, R. I., and the Argentina Naval Air Base in Newfoundland. Recent projects he has managed include the Travelers Insurance Co. Building and an addition to the Aetna Life Insurance Co. Building, both in Hartford, Conn.

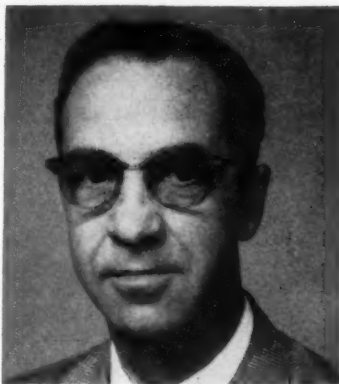
## Edward Balf Co.

A. I. (BUTCH) SAVIN of Hartford, Conn., president of the Edwards Balf Co., is the new president of the New England Road Builders Association. Savin formerly was president of Savin Construction Corp., and a former vice president of Merritt-Chapman & Scott Corp. Savin succeeds Fermo A. Bianchi in the post.

Other officers elected to the association include Walter J. Reed,

president and treasure of Walter Reed Corp. of Boston, vice president; Louis Julian, president of the Wes-Julian Construction Co. of Dedham, Mass., and Ernest Rotondi, treasurer of G. Rotondi and Sons of Melrose Mass., directors.

## McNeil Construction



THOMAS J. O'HARA is a new vice president of the McNeil Construction Co., Los Angeles, Calif.

O'Hara, who formerly was manager of operations, will head staff administration. He is a former vice-president and part owner of Robert Burnett, Inc., Batavia, N. Y., and a former vice president of Fleisher Engineering and Construction Co., Buffalo, N. Y.

McNeil also appointed Ted A. Anderson vice president. Formerly assistant to the company's general manager, Anderson now will aid the company in the building of commercial and industrial plants and facilities. He has been a member of the firm since 1941.

Since joining McNeil, he has held such posts as director of purchases, office manager, public relations manager, and project mgr.

## Fruin-Colnon

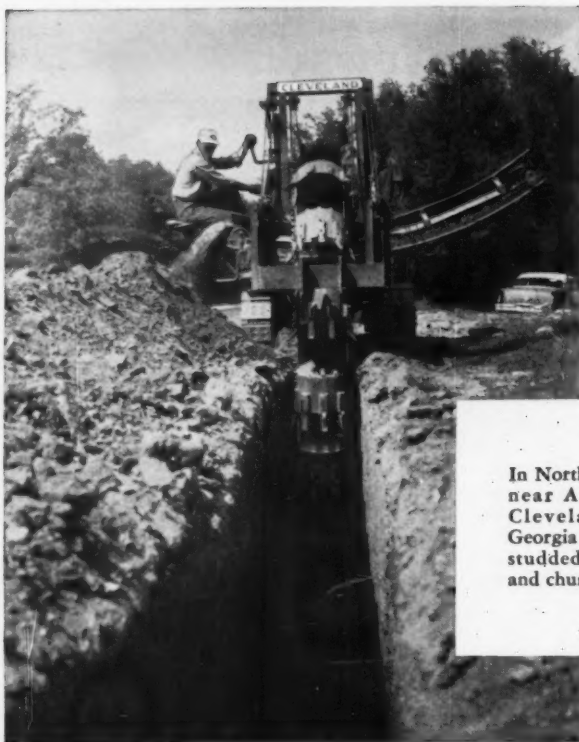
COL. DELBERT B. FREEMAN, (USA, Ret.) recently chief of the U.S. Army Mission to Bolivia, joins the Fruin-Colnon Contracting Co., St. Louis, Mo., as vice president in charge of foreign operations. Freeman's appointment came as part of the company's entry into overseas construction.

During Freeman's tour in Bolivia, he advised the Bolivian government on military and non-military engineering. Earlier, Freeman was division engineer for the U.S. Army Corps of Engineers at St. Louis, Mo., and district engineer at Fort Worth, Tex.

## J. F. Pritchard Co.



FRANK S. SAWYER (above) is new manager of construction and W. H. MacKAY, a new district manager of J. F. Pritchard Co.,



In North Druid Hills near Atlanta, this Cleveland 95 digs Georgia red clay, often studded with quartz and chunks of granite.

## nine Clevelands . . . never a failure in the field

"We have used Clevelands ever since 1946, when our company was organized," says C. V. Lanier, field superintendent for the Concrete Construction Co. of Atlanta, Ga., "and currently we are operating nine. Mechanically, we have never had a Cleveland halt in the field."

"We have encountered every sort of obstacle and have trenched through blue granite rock, sand rock, shale, stumps, on flat land and hilly, through all types of weather. Our Clevelands have been economical to operate, easy to maintain mechanically, adaptable to every terrain and simple to handle."



There's nothing like a Cleveland for trenching . . . accurate . . . fast . . . dependable . . . clean.

# The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



## MEN IN THE NEWS . . .

continued

Kansas City, Mo.

Sawyer, a graduate of the University of Maine, comes to Pritchard with 40 years experience as a construction manager. MacKay will head the company's Houston, Tex., office. He succeeds R. H. Bradley in the post.

## Corps of Engineers

CAPT. D. E. CARBERRY, CEC, USN, District Public Works Officer and Officer in Charge of Construction, Ninth Naval District, Great Lakes, Ill., goes to Madrid to take charge of construction of military bases being built in Spain. Capt. Joseph E. Rehler, CEC, USN, will take over his stateside duties.

MAJ. GEN. E. C. ITSCHNER, Chief, U.S. Army Engineers, is the new president of the Society of American Military Engineers. Itschner, first Army Engineers Chief to hold the presidency since 1927, was installed during ceremonies at the 38th annual meeting of the society at Fort Belvoir, Va. He succeeds Rear Admiral H. Arnold Karo in the post.

## Useful Information

These CONSTRUCTION METHODS reprints contain valuable information for contractors.

### PRODUCING AGGREGATES

60¢ each, 10 or more, 50¢ each

### CONCRETE MIXING AND PLACING

Paving—How to Get the Best Results

### EARTHMOVING—AN ART AND A SCIENCE

50¢ each, 10 or more, 40¢ each

### PRESTRESSED CONCRETE

35¢ each, 10 or more, 25¢ each

### CONTRACTORS' INSURANCE

25¢ each, 10 or more, 20¢ each

### BLASTING AGENT

### SLASHES POWDER COSTS

25¢ each

### COMPARATIVE SPECIFICATIONS SHEETS ON:

- a. Motor Graders
  - b. Crawler Tractors
  - c. Compressors
  - d. Tractor-Drawn Scrapers
  - e. Self-Propelled Scrapers
  - f. Self-Propelled Rollers
- 10¢ each, 10 or more, 8¢ each

**CONSTRUCTION METHODS and Equipment**  
330 W. 42nd St.,  
New York 36, N. Y.



## 6 YARDS PER MINUTE WITH A 105 EXCAVATOR

Constructing a dam spillway involves a considerable amount of earth moving. It also presents loading problems because of extremely tight working quarters.

At a dam project, they had been moving earth, consisting mainly of decomposed shale, with  $\frac{3}{4}$  yd. shovels loading from stockpiles pushed up by a bulldozer. In addition, the bulldozer had to rip the earth before dozing. This meant three separate operations — extra equipment tied up — an extremely costly, time-consuming job.

A versatile EIMCO 105 Excavator moved in — flying earth was all that could be seen from then on. The 105 overhead loader walked into the narrow spillway channel, started loading out 6-yard dump-tors at the rate of one every 40 seconds — total time lapse for dump-tor to move in, be loaded, move out: ONE MINUTE. The bulldozing and ripping operations were completely eliminated — production costs, equipment required, and time consumed were reduced to an absolute minimum.

EIMCO also manufactures a 105 Front End Loader with the same rugged construction and high production rates as the 105 Excavator. Write The EIMCO Corporation for detailed information on EIMCO high production, cost-saving 105 Loaders.



Eimco 105 Front End Loader.

**THE EIMCO CORPORATION**  
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N.Y.  
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Chicago, Ill.  
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Gateshead, England

Birmingham, Ala.  
Paris, France

Duluth, Minn.  
Milan, Italy

Pittsburgh, Pa.  
Johannesburg, South Africa

Seattle, Wash.  
Johannesburg, South Africa



B-339



# With Allison Torqmatic Drive this loader works like the Trojan it is



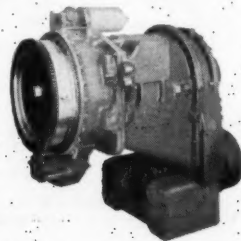
Allison TORQMATIC DRIVES team up with another great vehicle — the Trojan 404, a four-cubic-yard heavy-duty loader designed from its beginning to use a TORQMATIC CRT-5630.

For years in the earth-moving field the TORQMATIC CRT-5630 has proved its capabilities in tractors, bulldozers and scrapers. And now it enables the Trojan 404 to deliver an upswing in production when pitted against the toughest jobs.

The TORQMATIC CRT-5630 is a complete, balanced power train which *matches* engine speed *instantly* with torque demand. Equipment manufacturers agree an efficient four-cubic-yard loader demands a torque converter with

a tailored full-power shift transmission. That's why they pick the TORQMATIC CRT-5630. And, it offers additional benefits — cushion-flow forward and reverse clutches — rugged planetary gearing — equal speeds in either direction — all a result of time-proved Allison design.

Take a tip from Yale and Towne and more than 80 other equipment manufacturers—specify an Allison TORQMATIC DRIVE in your next piece of equipment. See your dealer or write Allison Division of General Motors, Indianapolis 6, Indiana.



*Allison*



**TORQMATIC®  
DRIVES**

## Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

### New Distributors

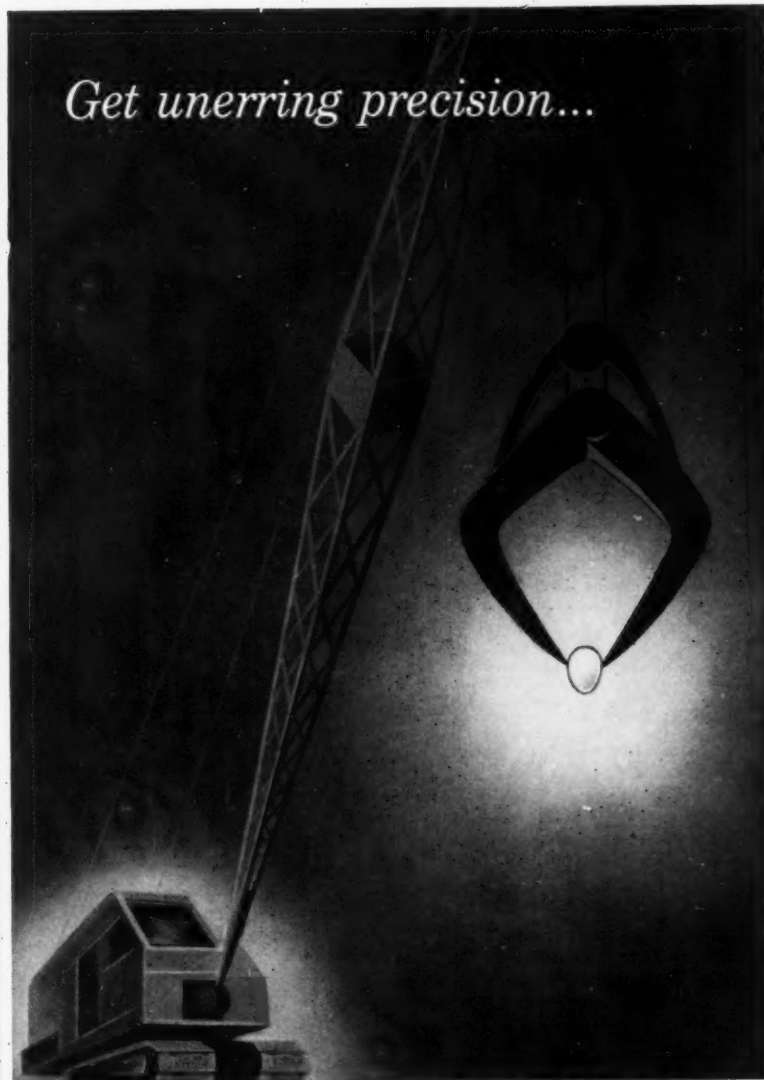
**Koehring Co.:** George M. Philpott Co. Inc. of San Francisco, Calif., has been named distributor of Koehring Division products. The Buffalo-Springfield Roller Co. Division has appointed G. C. Phillips Tractor Co. Inc. of Birmingham, Ala., as distributor.

**Diamond T. Motor Truck Co.:** The following four distributors have been appointed: Transportation Equipment, Inc. of Albuquerque, New Mex.; Harrisonburg Truck Terminal, Inc. of Harrisonburg, Va.; Doylestown Motors, Inc. of Doylestown, Pa.; and Wright Brothers, Inc. of Poughkeepsie, N. Y.

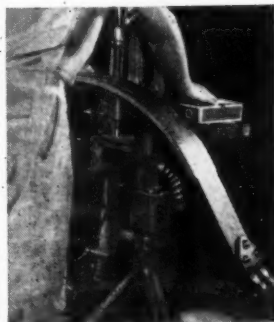
**Yale & Towne Mfg. Co.:** The Contractors Machinery Division has appointed the following three distributors: Prairie State Equipment Co. of Thornton, Ill.; Wepco Equipment Co. of Cleveland, Ohio; Frost Machinery Co. Ltd. of Winnipeg, Man., Canada. The Materials Handling Division has named Briggs-Weaver Machinery Co. of Dallas, Tex., a distributor for lift trucks and tractor shovels.

**Baldwin-Lima-Hamilton Corp.:** The Construction Equipment Division has appointed the following two distributors: Western Machinery Co. of Phoenix and Tucson, Ariz.; and Jaeger-Lembo Machine Corp. of Corona, Long Island, N. Y.

**Four Wheel Drive Auto Co.:** The following distributors have been appointed: Seitz Machinery Co. of Billings, Mont.; Brinckman Motors of Michigan City, Ind.; George Bock Co. of Dubuque, Ia.; Silver Eagle Co. of Portland, Ore.; Economy Motors Inc. of Duluth, Minn.; Kohls Auto Co. of Eau Claire, Wis.; D. E. Crooker of



that speeds payloads...  
with J-M Friction Materials



Riveting J-M woven lining to a hoist brake band.

You may never even try the egg-lift trick... but precision-engineered Johns-Manville Friction Materials do assure you of the positive control that speeds payloads on any type of job.

These job-proved friction materials are rugged and durable... designed to pay off in terms of more loads per hour in complete safety. And you can choose from a wide range of linings: blocks, facings, cones and segments that are standard equipment on leading makes of heavy-duty units. For the right material for your needs, see your Johns-Manville Distributor or write Johns-Manville, Box 14, New York 16, N.Y. In Canada: Port Credit, Ontario. Ask for Brochure FM 35-A.

**JOHNS-MANVILLE**

100 YEARS OF QUALITY PRODUCTS... 1858... 1958



# 5 FLOORS POURED Without DISMANTLING THE FORMS



When they built the new Z.C.M.I. Parking Terrace, in Salt Lake City, the Jacobson Construction Company came up with a smart use for Beebe Winches. By employing sixteen 5-ton Beebe Winches, they were able to pour all five floors of this structure without dismantling the forms.

First, pre-stressed concrete columns were erected, and the top floor was poured in place. Next Beebe Winches, two by each column were installed on the top floor. The cable from each Winch ran through a hole in the floor and around a sheave which was attached to the wooden form in which the floor had been poured. The cable then ran back up through the floor and was dead-ended at the Winch.

Using the "sensitive" power of the Beebe Winches, the form was then gently lowered into position for the next floor below. After each floor was poured, the form was lowered to the next floor level.

Thus, the contractor poured all five floors using the same form without dismantling it. He saved time and money.

For over 36 years Beebe Winches have been providing low-cost, smoothly controlled power for construction jobs. This is only one example of the thousands of ways that contractors have used Beebe Winches to save money and increase their profits.



strongest geared power for its weight  
in the world

## Beebe Bros.



2730 Sixth Ave. S. • Seattle 4, Washington

## SALES AND SERVICE

continued

Ontonagon, Mich.; Radke GMC Truck Sales of Schofield, Wis.; Smith & Kerber of Broomall, Pa.; Eggimann Motor and Equipment Sales, of Madison, Wis.; and Truesdell GMC Truck Inc. of Toledo, Ohio.

**The Warner & Swasey Co.:** The following four Gradall distributors have been appointed: Pecaut Equipment Co. of Sioux Falls, S. Dak.; Lake Shore, Inc. of Iron Mountain, Mich.; Ryan Equipment Co. of St. Louis, Mo.; and Capital Equipment Co. Inc. of Richmond, Va.

## On the Sales Front

**Marion Power Shovel Co.:** The following four new sales representatives have been appointed: Jack W. Forgy, Kansas City, Mo.; E. R. (Bob) Johnsen, Phoenix, Ariz.; Joseph E. Fodor, New York City; Peter F. Jarvis, eastern Canada.

**Lincoln Electric Co.:** The company has opened two new district offices. Robert W. Thomas becomes manager in the Memphis, Tenn., office. Russell S. Hale becomes manager in the Albany, N. Y., office.

**Commercial Shearing & Stamping Co.:** The company has opened a new office in Atlanta, Ga., to serve the southeastern states. George Fannon has been named southeastern regional manager to head the office.

**Bethlehem Steel Corp.:** Bethlehem Pacific Coast Steel Corp. has opened a sales office in Salt Lake City, Utah. The office is headed by L. B. Gillette and will handle steel products from Bethlehem's eastern plants as well as products from the west coast mills.

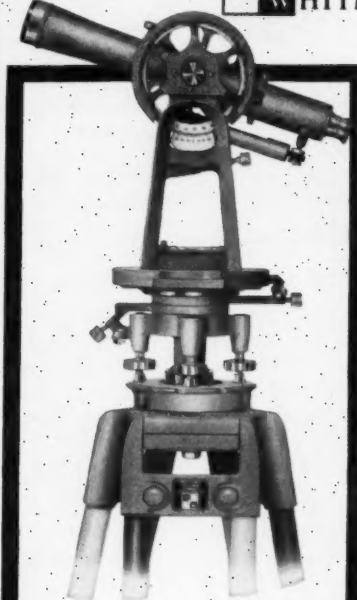
## In the Main Office

**Atlas Powder Co.:** William C. Lytle has been elected a vice president of the company. He will be in charge of the Explosives Division.

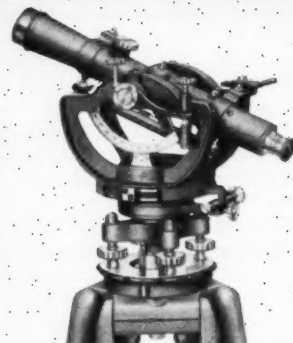
**Caterpillar Tractor Co.:** Three promotions are announced. Gail E. Spain becomes president of the company's Foreign Trade Group, which includes a number of

contractors and engineers know  
**THE SIGHT IS RIGHT**

WITH A DAVID WHITE



**For Contractors**—A brand new, heavy-duty transit designed for fast, accurate surveys in road construction, grading, other major jobs. Only one of its type on the market. Rugged, simplified construction with all the features you need: double centering, revolves 360 degrees for reverse readings, reads to one minute, vertically and horizontally. T8200 Contractors' Transit Includes new, American-style, wide-frame tripod. \*Retails for \$375.00.



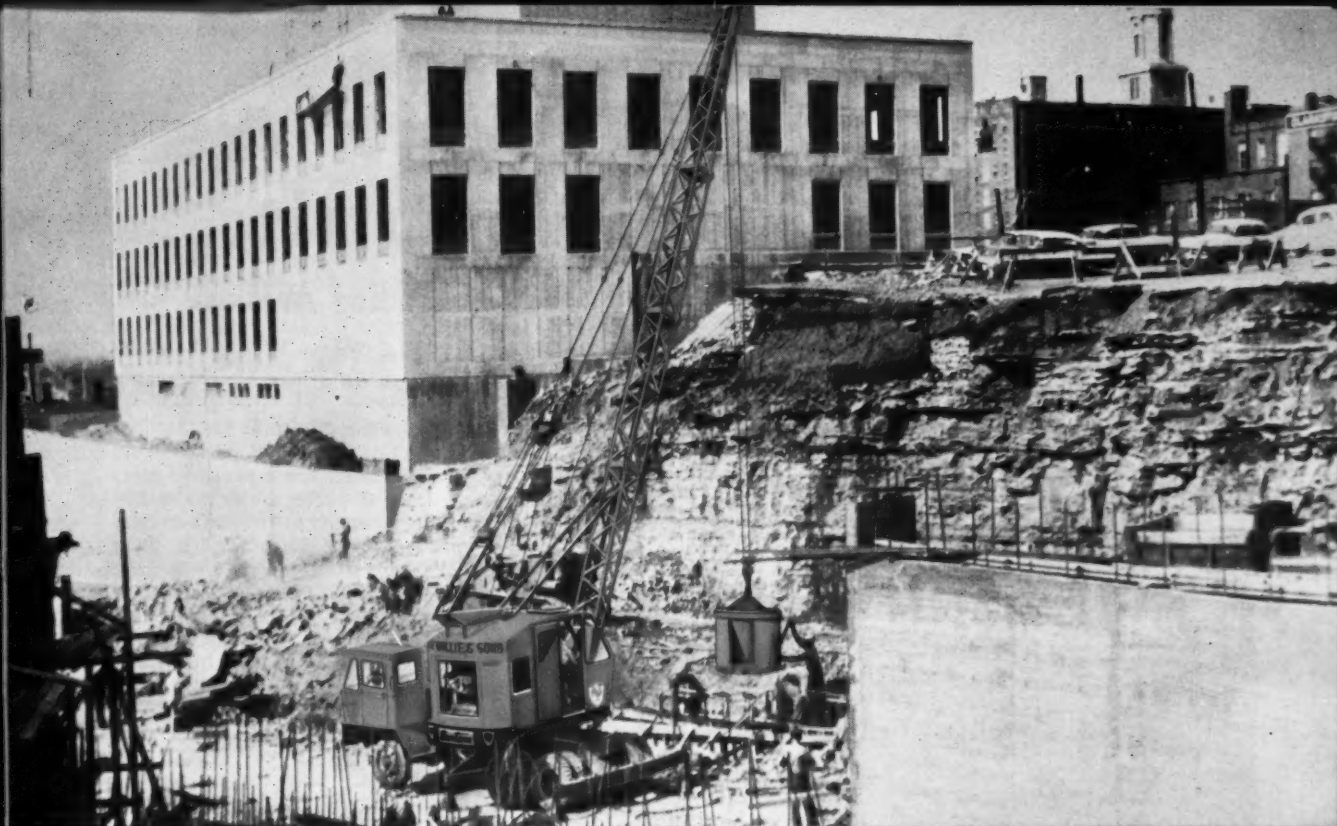
**For Contractors**—Heavy-duty instrument for general highway construction, for laying angles, to ascertain slopes, align piers, plumb walls, for tiling, and leveling of floors. T8300 Universal Builders' Level Transit. Includes new, American-style, wide-frame tripod. \*Retails for \$217.00.

\*The T8200 and T8300 may be purchased at 10 per cent down at your blueprint, or lumber, building supply or hardware dealer. Write today for your free David White surveying instrument catalog.

Prices slightly higher west of the Rocky Mountains

**DAVID WHITE INSTRUMENT COMPANY**  
Dept. B, 2051 North 19th St., Milwaukee 5, Wis.





## BANTAM'S "BIG-RIG" performance speeds expressway overpass job...

### ✓ Handles ¾-yd. concrete bucket

In Nashville, Tennessee, general contractors O. E. Willie & Sons are putting in a complicated overpass on a new expressway through downtown Nashville—time is tight. BANTAM keeps the job on schedule!

First the BANTAM was used as a back hoe, digging up and loading large sections of old curbing. Then it was converted on the spot to a crane with 45' boom and a ¾-yd. bucket to pour retaining walls and abutments.

### ✓ Doubles on cleanup chores

The terrain is rough, the work tricky. Long reaches and precise control are vital. Made to order for BANTAM—it's speeding up production with its lively cycle, quick maneuvering ease and nonstop day-long operation. Actually, BANTAM has proved itself so capable in performance on this man-sized job, contractor Lloyd Willie praised it this way: "BANTAM fills our need for a highly maneuverable, fast-operating crane and back hoe perfect for working in tight places and moving around on the job in a hurry."

#### Check list of BANTAM's "Big-Rig" features

- Carriers built by BANTAM for job-matched shovel-crane service—no "adaptations."
- Easy 8-ton lifting capacity and 100-yd.-per-hour digging pace to handle the biggest part of your job assignments.
- Less than \$100.00 a year maintenance costs—proved by hundreds of actual BANTAM owner reports.
- Amazing job range—works and earns in every kind of lifting, loading, excavating, handling, erecting job with 11 fast-change attachments, including BANTAM's revolutionary new tamper for high-speed compaction.
- Easiest operation with BANTAM's trouble-free, fast-acting mechanical controls.
- BANTAM gives you as standard many features others list as extra equipment (or don't offer at all), such as power-up and power-controlled lowering boom hoist for safe, precise boom work . . . anti-friction bearings . . . oversize brakes and clutches.

#### BANTAM'S LOW COST MEANS BIGGER PROFITS PER JOB

C-35 BANTAM



CR-35 BANTAM



World's largest producer of truck crane-excavators  
RC-191

Yours for the asking! Helpful new specification bulletins on the BANTAM of your choice. Get yours now! Schield-Bantam Company, 298 Park Street, Waverly, Iowa.

221 Park Street, Waverly, Iowa, U.S.A.

Visit your friendly BANTAM DISTRIBUTOR . . . see how  
BANTAM benefits your picture better!



SCHIELD  
**Bantam Co.**

# "Fast And Tough As A Texas Jackrabbit..."

Our Job-Hopping Trojan 154 Services Three Loading Areas—  
Keeps Trucks On The Move!"



"The Trojan 154 is the spearhead of our operation," says Theodore Collora, President of Atlantic Gravel Co. Not only does it charge the hopper in one area, it handles all the truck-loading in two other areas located a quarter of a mile away . . . and they come in a steady stream! It's nothing for the '154' to handle a minimum of 10 trucks an hour and still find time for other work around the plants . . . And, there has been nothing but normal maintenance and no downtime since its purchase in December 1957 . . . Operator Dick Gant said, "The '154' is worth its weight in gold . . . It's easy to handle and operates fast . . . I really get around in this machine" . . . We say, "Action-Test" the Trojan 154 . . . Your local distributor will gladly arrange both the time and place that best suits your own working schedule.



Complete, detailed brochures are now available on the Trojan line. For your material write to Department S-8, Contractors Machinery Div., The Yale & Towne Mfg. Co., Batavia, N. Y. or San Leandro, Cal.



**TROJAN\***  
\*REG. U. S. PAT. OFF.

**TRACTOR SHOVELS**

**YALE & TOWNE**

**2 & 4 Wheel Drive Front End Loaders**

CONTRACTORS MACHINERY DIV. THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

## SALES AND SERVICE

continued

foreign subsidiary companies. He will retain his position of vice president of the parent company. J. R. Munro becomes vice president and will be responsible for the company's Manufacturing Division. W. K. Cox also becomes vice president, with administrative responsibility for domestic sales and sales promotion.

**Spanall of the Pacific, Inc.:** At a recent board of directors meeting Graeme K. MacDonald was elected president, Charles E. Nelson was elected vice president and Frederick C. Whitman was elected to the board of directors.

### Associations

**Wire Reinforcement Institute, Inc.:** Earl C. Planett of the Planett Manufacturing Co. has been named president of the Institute. Ford P. Schusler of the Keystone Steel and Wire Co. was named vice president.

**Industrial Research Institute, Inc.:** Robert W. Cairns, director of research for Hercules Powder Co., has been elected vice president and president-elect of the Institute. The membership of the Institute is comprised mainly of companies who support technical research programs.

### Special Mention

**Judson Pacific - Murphy Corp.:** The company, largest independent structural steel fabricator in the West, will be purchased by Yuba Consolidated Industries, Inc., of San Francisco, for \$3.5 million. J. Phillip Murphy will remain as president. Yuba, whose operations were limited to mining and to manufacturing of dredges until last year, has purchased eight firms since J. L. McGara took over as president of the company in January, 1957.

**Waukesha Motor Co.:** The LeRoi Division of the Westinghouse Air Brake Co. has sold the assets of its engine business to Waukesha. LeRoi has been manufacturing engines since World War I and its line includes sizes from 6 to 675 hp. It is dropping the engine line to concentrate on its air compressor and tool business.

SINCE 1885 — GRUENDLER QUALITY, THE BEST THAT MONEY CAN BUY.



"The Plant that goes to the job site"

## GRUENDLER CRUSHING, SCREENING and MATERIAL HANDLING MOBILE UNIT

Constant aggregate crushing and screening. Unusually high capacities. Ruggedly engineered for long life with low maintenance and low cost power. Fast service to and from pit or gravel job-site locations. Produces graded aggregates. Handles oversize. Conveyors for each grade. Double or triple deck screens. Manufactured with Jaw Crusher, Impactor, Hammermill or Roll Crusher. Tandem axle, air brakes, pneumatic tires and tractor hitch. Write for illustrated bulletins BR-35-1A & 1B and name of Distributor.

### GRUENDLER CRUSHER & PULVERIZER CO.

Dept. CM-858 • 2915 North Market Street • St. Louis 6, Mo.

# ROCKFORD

## PATENTED CLUTCH LEVERS •



- Reduce friction and wear • Improve clutch release action • and Prevent lever throw-out

You get these patented features—in addition to (1) as many as twenty four heat-resistant, non-set springs to assure even pressure all around the plate and long service life (2) nine large side ports and twenty one holes in the cover to carry away heat, dirt, grease and moisture (3) balanced, function-simplified levers to insure efficient operation in high-speed, high-torque engines (4) cushioning and dampening arrangements to minimize shock-load effect and blot out vibration (5) a wide variety of organic, metallic, or Morlife® friction plates. When you specify ROCKFORD you get ALL of these advantages that enable ROCKFORD CLUTCHES to serve better and longer than any "chinese copies".



### SEND FOR THIS HANDY BULLETIN

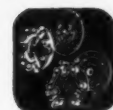
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.



## ROCKFORD Clutch Division BORG-WARNER

1331 Eighteenth Ave., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 38 So. Wabash, Chicago 3, Ill.



Small  
Spring Loaded



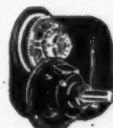
Heavy Duty  
Spring Loaded



Oil or Dry  
Multiple Disc



Heavy Duty  
Over Center



Power  
Take-Offs



Speed  
Reducers

# CLUTCHES



# How contractor V. N. Holderman & Sons expanded from \$500,000 to over \$20 million of construction a year

## ...1,120 units of equipment and over 1,000 men... in 12 years

To the man with ability, initiative and drive, the American construction industry offers great opportunity for high levels of success and prosperity.

Such a man is construction contractor V. N. Holderman, President, Holderman & Sons, Inc. of Columbus, Ohio. Holderman's rapid growth and success in the past decade is characteristic of America's free enterprise system and the fabulous growth pattern of the construction industry during this same period.

V. N. Holderman is a contractor whose entire life has been in construction work. He started as a truck driver, equipment operator, foreman and superintendent. In 1938 he went into his own contracting business. In 1946, Holderman incorporated and brought his two sons into the organization. V. N. Holderman is president, Gail Holderman is vice president in charge of construction, and Bob Holderman is secretary-treasurer. The organization is divided into three separate corporations... paving, bridge, and general contracting.

### From \$½ to over \$20 million in 12 years

The record growth and development of this organization during the period 1946-1958 is evidenced in these few facts. In 1946, Holderman did a total of \$500,000 worth of construction with 115 units of equipment. In 1958, (first six months) Holderman & Sons received \$20.3 million in contracts and boasts a fleet of 1,120 units of equipment. In contrast to the organization's beginning with one office girl, one man and the owner, Holderman now has a permanent staff of 235 people, and up to 1,000 workers at the peak of operations. *In 1957 the Holderman payroll came to \$3 million.*

### Facts on Holderman & Sons, Inc.

- \$13.2 million of construction completed in 1957
- \$20.3 million of contracts received in '58 (first six months)
- Owns and operates 1,120 units of equipment valued at \$4 million
- \$750,000 of new equipment purchased in 1957
- \$5.5 million spent for materials in 1957

Holderman's 1,120 units of construction machinery and related equipment are employed primarily in Ohio with

some work occasionally in Pennsylvania and West Virginia. The principal types of work done are highways, airport, railroads, grading, bridges, and drainage. Below is a breakdown of Holderman's equipment with which \$13.2 million of construction was done in 1957.

### \$5.5 million spent for materials in 1957

In 1957, Holderman & Sons completed 700,000 square yards of paving. The materials required for this construction work included:

288,750 bbls of cement  
115,000 tons #3 aggregate  
77,000 tons #4 aggregate  
113,750 tons sand  
2,457 tons mesh

To keep over 1,120 units of equipment operating, Holderman purchased 353,119 gallons of gasoline... 813,458 gallons of diesel fuel... 25,885 gallons of oil... 56,343 pounds of grease. On seven current highway projects, totaling \$27 million (and 43 miles) Holderman requires:

9.4 million c.y. of excavation  
572,750 l.f. of pipe  
274,364 c.y. base course  
898,605 c.y. 10" concrete pavement  
38,033 c.y. structural concrete  
151,137 l.f. piling

### Key personnel participate in buying decisions

Says contractor V. N. Holderman: "We are greatly influenced by the performance of a piece of equipment and in having the least possible downtime. Before making equipment purchases, we have a one or two-day meeting in which I, my two sons, the superintendents and mechanics participate. We discuss the advantages and disadvantages of different equipment, their performance on the job, soil conditions they have to meet, our joint and individual experience with equipment, etc. On the basis of these joint discussions, we decide what kind and amount of equipment to buy and what brand. Our buying policy enables our key personnel to debate the advantages and disadvantages of different kinds and brands of equipment. Our final decision is a joint decision." In 1957, Holderman & Sons purchased \$750,000 of new equipment.

### Holderman Equipment Inventory

21 automobiles	3 formgraders	3 planers, subgrade	1 trailer, semi-dump
4 bins, aggregate, steel, knockdown	6 Georgia buggies	53 pumps, water, gas and electric	9 trailers semi-lowboy
13 bins, cement, steel, knockdown	14 graders, self-propelled	8 rollers, road tandem	13 trailers, all other
15 boom attachments, crane	19 grinders, bench and hand	15 rollers, tamping, sheepfoot, rubber-tired	7 transits, surveyors
5 breakers, pavement	9 hammers, pile or sheeting (drop, steam or air)	2 rooters	3 trenching machines
11 buckets, clamshell	9 harrows, spring tooth, other	40 saws, chain, electric, hand	63 trucks, pickup and panel
7 buckets, concrete	7 hoists, air and electric	40 scrapers, self-loading, scoop pan	78 trucks, stake, dump and other
10 buckets, dragline	10 jacks, bridge, hydraulic	15 shovels, crawler	18 vibrators, concrete
25 buildings, field office	journal ratchet and screw	2 shovel attachments	10 welders, electric
58 buildings, parts, tools, other	1 joint installing machine	3 spreaders, concrete	22 wrenches, air and electric
24 bulldozer attachments	9 levels, surveyors	3 subgraders	16 tractors, 4 wheel, rubber tire
9 compressors, portable, gas-diesel	53 light plants, portable or stationary, gas or diesel	19 tampers, backfill	16 tractors, 2 wheel, rubber tire
14 compressors, stationary, gas, diesel, electric	3 loaders, front end	39 tanks tipple, water, other	1 truck, heavy duty earth moving
2 curing machines	2 mixers, concrete construction	3 tar kettles, oil burning	4 wagons, direct hitch
26 drills, hand, electric	4 mixers, concrete paving	3 templets, subgrade, pin	6 spreaders, base course, gravel, stone
8 drills, rock, air	9 motors, electric	40 torches, cutting, welding and heating	58 two-way radios
4 drills wagon	2 motors, gas or diesel	45 tractors, crawler	5 base stations
7 finish machines, concrete	4 pin drivers	8 tractors, wheel, small	248 miscellaneous



President V. N. Holderman, flanked by sons Gail (left) and Bob (right). V. N. Holderman has been a CONSTRUCTION METHODS magazine subscriber since 1937. Gail and Bob are also subscribers.

#### Two airplanes used in Holderman's construction operation

Holderman & Sons own and operate a Cessna 180 and twin-engine Aero Commander airplane. A regular staff pilot is retained the year 'round. These planes enable Holderman and his supervisory personnel to visit as many as five projects hundreds of miles apart in one day. By auto, it would take from three to four days. As Mr. Holderman says, "although the investment and operation of these planes is large, the time they save and close supervision they afford, make them a worthwhile and necessary investment."

Two-way radio is used from the planes to projects and base stations. Very often the planes are used to secure vital parts for equipment from different cities. These are flown right to the project where they are needed. This saves days in many cases and cuts downtime of machinery to an absolute minimum.

#### Contractor V. N. Holderman is a subscriber to CONSTRUCTION METHODS since 1937

One very important source of help to this contractor and his key personnel, according to Mr. Holderman, is CONSTRUCTION METHODS AND EQUIPMENT Magazine. Here is what he says:

**"CONSTRUCTION METHODS, over the past 20 years, has provided me with many new ideas and helpful information which I have been able to apply in my operations. I like this magazine because it presents new techniques, equipment, and materials in a practical way. It gives us valuable information and ideas that help us solve a variety of problems."**

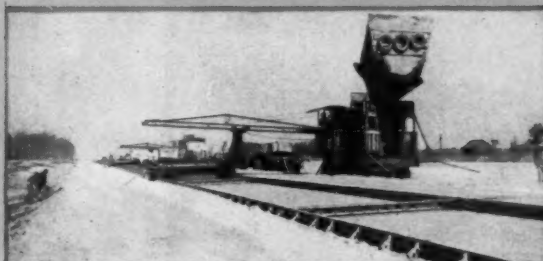
#### Holderman attributes success to staff

Much of the success of the V. N. Holderman & Sons contracting firm, president Holderman attributes to his entire staff and particularly his key executives and staff members. In addition to his sons, Gail and Bob, competent men like Paul K. Benner, head of the bridge work, and George Yinger, head of paving, play key roles in the Holderman construction operation. "These and all the other men who work together in our organization are the key to our success", says V. N. Holderman.

In addition to the president, 29 other key staff personnel in Holderman & Sons subscribe to CONSTRUCTION METHODS... including Gail Holderman, Vice President and Bob Holderman, Secretary-Treasurer, Chief Engineer, all Project Superintendents, Equipment Superintendent and Shop Superintendent.



Above, Holderman's equipment shown clearing and grading on section of Ohio Turnpike. Below, \$3.9 million, 10¼ mile bypass around Lima, Ohio. Holderman's paving equipment shown pouring part of required 250,000 sq. yds. of concrete pavement. Project also required 1.3 mil. yds. of excavation, 87,700 l.f. of pipe, 14 single bridges, and 4 twin bridges.



Holderman's 80' x 270' maintenance shop. Staff of 66 men work in three major sections; truck and car maintenance, heavy equipment department, and paving section. President Holderman designed and built shop and wrote complete shop manual covering every job in his maintenance operation.

#### TO REACH AND SELL CONSTRUCTION CONTRACTORS... PUT YOUR SALES MESSAGE IN CONSTRUCTION METHODS

Most of the purchasing in the construction industry is done by the men who actually complete the finished project... the contractors. Their influence is strongest on brands and type of equipment, materials, and tools required for construction operations. They also have an influence on the kind of equipment that will be installed in projects.

CONSTRUCTION METHODS AND EQUIPMENT magazine offers you the most effective means to reach and sell this primary construction contractor market with your most potent sales messages. Over 45,500 paid subscribers, 64% of whom are key personnel in over 13,250 contracting firms, receive CONSTRUCTION METHODS AND EQUIPMENT each month. To reach and sell the contractor market... advertise in CONSTRUCTION METHODS... the contractor magazine.

# Construction Methods

AND  
EQUIPMENT

A MCGRAW-HILL PUBLICATION

330 WEST 42ND STREET, NEW YORK 36, NEW YORK



# Construction Equipment News...



## Rammer Can't Run Away

Johnson's gasoline-powered Max-tamp rammer jumps 18 in. 80 times a min and exerts 311 ft lb of pressure with each blow. The 220-lb rammer cannot "run away" because the operator controls each jump by means of the ring handle. After the combustion chamber is primed, the operator ignites the mixture by squeezing the handle. The machine jumps and additional fuel is pulled into the cylinder for the next cycle.—**Complete Machinery & Equipment Co., 36-40 11th St., Long Island City, N.Y.**

## Forward or Backward

Koehring now produces a 10-yd Dumptor with dual steering wheels, throttles, and brake pedals that enable the operator to drive in either direction without turning the rig around. The truck can handle a 30,000 lb payload. Speeds up to 20 mph in either direction are possible through a constant mesh transmission and a torque converter. To facilitate travel over rough terrain, the steering axle oscillates up to 18 in. The Dumptor can climb 28½-deg grades loaded. — **Koehring Div., Milwaukee 16, Wis.**

## Tractor-Shovel Line Fitted With Forks

Clark now offers fork-lift attachments for all its Michigan tractor-shovels. Designed for rapid field installation, the operator can change from bucket to forks by removing and reinserting four pins. Hydraulic lines are not disturbed. Two tilt cylinders tip back forks for safe load control. Capacities range from 4,000 lb for the 1½-yd model 75A (right) to 15,000 lb for the new 6-yd model 375A. Fork can be hand-spaced to suit load characteristics.—**Construction Machinery Div., Clark Equipment Co., Pipestone Rd., Box 599, Benton Harbor, Mich.**







### ◀ Hydraulic Hoe-Shovel

A combination Hydrohoe-Hydroshovel in the  $\frac{1}{2}$ -yd class has been introduced by Bucyrus-Erie as a companion piece to its H-5 Hydrocrane. The truck-mounted excavator has three hydraulic circuits, each powered by its own pump. Differential and selector valves enable the operator to concentrate pump power where it is most needed. Other features include a boom that telescopes up to 4 ft, hydraulically controlled out-riggers, and double-acting rams that allow dippers to be reversed from hoe to shovel.—Bucyrus-Erie Co., S. Milwaukee, Wisc.

### Scraper Loads Easily ▶

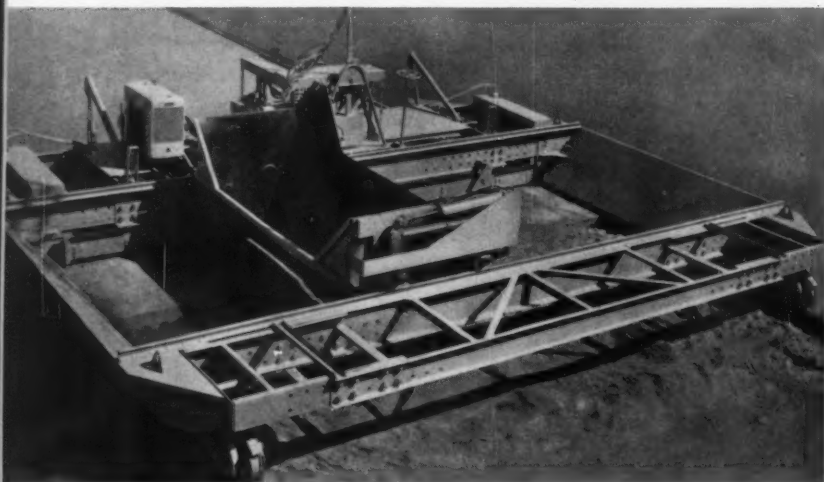
A  $11\frac{1}{2}$ -yd scraper for use with tractors developing at least 70 hp is the latest addition to the LeTourneau - Westinghouse line. Called the DT Fullpak, the scraper has an 8  $\frac{1}{3}$ -ft, three-section cutting edge that is angled precisely with the bowl floor. To further reduce loading resistance, the bowl floor tilts only 1 deg. Apron opening is 5 ft. The 29-ft-long scraper can turn 180 deg in 26 ft. Tires are 16.00-20, 16 ply, tubeless. Price is \$9,400; fob Peoria. — LeTourneau - Westinghouse Co., Peoria, Ill.



### ◀ New Double-Tandem Crane Carriers

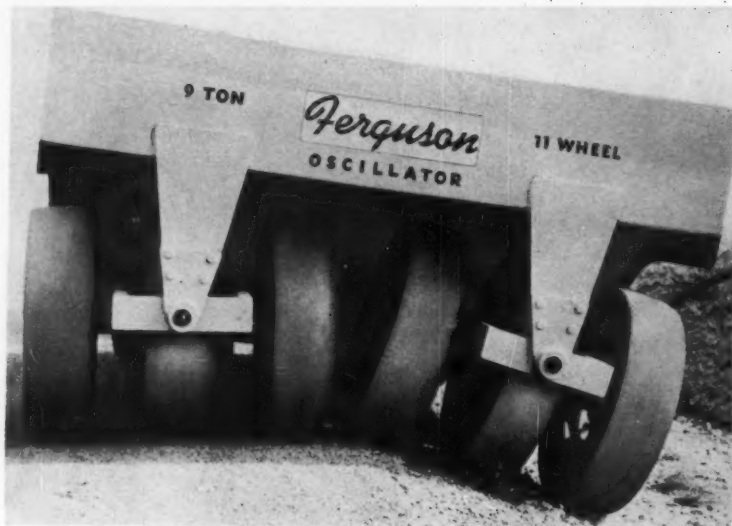
Two new series of double-tandem 8x4 and 8x6 rubber-tired carriers for use with cranes in the 25 to 45-ton class have been introduced by Four Wheel Drive Auto Co. A choice of gasoline or diesel power in a wide range of ratings is available. The 84 series delivers driving power to both axles of the rear tandem and the new 86-series has a driving rear tandem, plus a driving front axle. Both series feature reinforced, high-tensile steel frames.—Four Wheel Drive Auto Co., Clintonville, Wisc.

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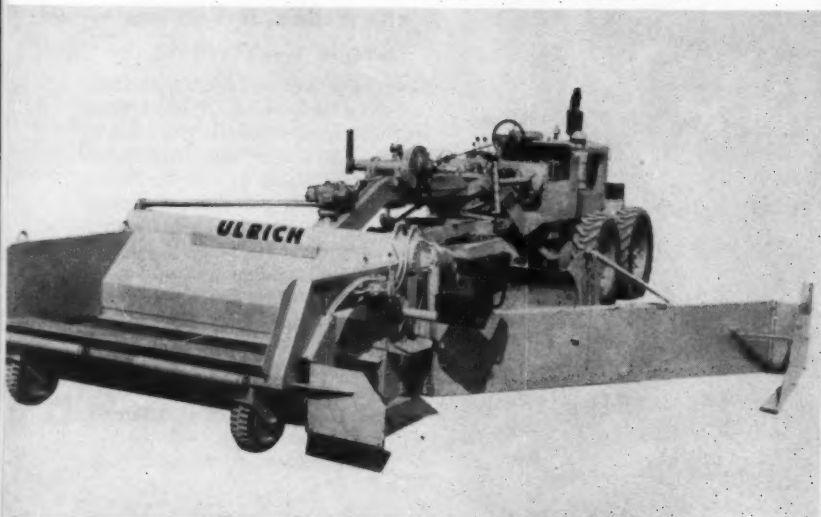
### Dumpcrete Spreader

After the 4-yd bucket of Maxon's new spreader is loaded from a Dumpcrete dump body it moves transversely across the sub-grade to place a pre-determined thickness of concrete. The bucket opening controls the rate of flow and bucket height is adjustable for any slab thickness. As the spreader moves ahead, a strike-off bar screeds concrete longitudinally and the bucket returns for its next load. According to the manufacturer, the spreader can place up to 180 yd per hr.—Maxon Construction Co., 2600 Far Hills Ave., Dayton, Ohio.



### Roller Covers Slopes

The new Ferguson tow-type pneumatic roller features a wheel oscillation design that allows the machine to get complete coverage on shoulder slopes as great as 2:1. Called the model RT-1100 Oscillator, it has 11 wheels and weighs 3,630 lb empty. Fully ballasted, it weighs about 25,300 lb and exerts a ground pressure of 306 lb per in. of tire width. Standard tires are 7.50-15, 4 or 6 ply. Overall rolling width is 83 in. and the wheelbase is 96 in. Recommended tractor size is in the 30-40-hp class.—Shovel Supply Co., Box 1369, Dallas 21, Texas.



### New Job for Grader

A motor grader attachment for spreading shoulder material or for filling trenches on road-widening jobs has been developed by Ulrich. Trucks dump into the spreader's hopper and material is delivered to the shoulder or trench by a conveyor belt. The hydraulic system that operates the belt, dump apron, and strike-off blade is powered by a 50-hp engine. The strike-off blade can be adjusted to spread from one to 10 ft wide and from 16 in. below to 8 in. above the pavement.—Ulrich Mfg. Co., Roanoke, Ill.

continued on page 155

# OLIVER

## OC-12 POWER-TURN TRACTOR



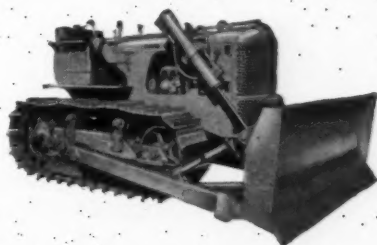
**"Like it better than any tractor I've ever owned."**

Florida contractor says of OC-12

Building this access road through some tough, semi-swamp land in Columbia County provided a good test for the OC-12—and a real comparison of performance with other tractors. "And I've owned and used all of them," said Sam H. Noland, head of the contracting firm that bears his name in Lake City, Florida.

"Other tractors that worked in this area bogged down and had to be pulled out. The Oliver can wade deeper without getting stuck. This tractor is easier to turn and maneuver. The hydraulic system is more powerful; I like the way we can raise the Oliver's blade higher than on other tractors."

Mr. Noland also talks about economy. "We use about 4 to 5 gallons of fuel handling heavy work where other tractors doing even lighter work use from 7 to 8 gallons." Yes, Oliver's super torque diesel delivers the lowest operating costs for any tractor of its size. Get the facts. Ask your Oliver distributor to demonstrate an OC-12.



### OC-12 POWER TURN TRACTOR

Two separate yet connected systems of control enable you to make either sharp or gradual turns with full power on both tracks at all times—a tremendous competitive operating advantage. The OC-12 is available with either gas or diesel engine. Ask for literature.



**THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment





## ILLINOIS TOLL Highway

### Fabricators of Prestressed Concrete:

American-Marietta Co.  
Hodgkins, Illinois  
Material Service Co.  
Algonquin, Illinois  
Midwest  
Prestressed  
Concrete Co.  
Rochelle, Illinois  
Consumers Co. (Div. of  
Vulcan Materials Co.)  
McCook, Illinois

On the Illinois Toll Highway, now under construction, 219 of a total of 265 bridges use prestressed concrete girders. This represents a total of 6,872 prestressed girders varying in length from 40 to 90 ft. . . . Being used in all of the 219 bridges are SUPERIOR "HOLD DOWNS" for restraining the cables in the girders now being produced by the fabricators listed above.

# SUPERIOR Form Ties, Hangers, Screed Supports, and "Hold Downs" Speed Construction....

Whether it's Form Hangers for deck work, Coil Ties for retaining walls, heavy-duty Screed Supports for use with heavy screeding equipment, or "Hold Downs" in prestressed beams, you'll find SUPERIOR accessories on the job to help speed the Illinois Toll Highway program in northern Illinois.

With increasingly keen competition for this type of work, contractors have discovered that the efficient forming

methods of SUPERIOR accessories offer all-important bidding advantages.

Whenever you are planning any type of form work . . . Superior's experienced engineering service is available to prepare form layouts, estimates and quotations. This comprehensive service is offered without charge.

A new 6 PAGE BULLETIN is available—Describes the SUPERIOR items for use in form work for bridges and allied projects.

Photo Credits—Illinois Toll Highway Comm.



FOX RIVER BRIDGE near Elgin, Ill. Photo shows progress of work by Arcole-Midwest Co., using SUPERIOR products.



PRESCON HANGER



HEAVY  
DUTY  
SCREED  
SUPPORTS



"HOLD  
DOWNS"



CONE-FAST COIL TIE



PLATE HANGER FRAME



TILT LOCK WASHER ASSEMBLY



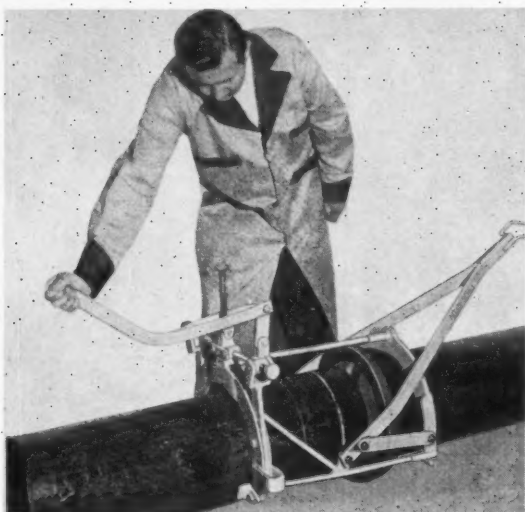
OVERPASS and BRIDGE CONSTRUCTION progressing close to schedule—Entire system is slated for completion Dec. 31, 1958, although some portions will open this summer.

**SUPERIOR Concrete Accessories, Inc.**, 9301 King St., Franklin Park, Ill.  
(A Suburb of Chicago)

NEW YORK OFFICE  
1775 Broadway, N.Y. 19, N.Y.

HOUSTON OFFICE  
4101 San Jacinto, Houston 4, Tex.

PACIFIC COAST PLANT  
2100 Williams St., San Leandro, Calif.



### Coupler Needs No Chains or Cables

Wachs' new Pipe Coupler joins cement-asbestos, concrete, clay, or cast iron pressure-joint pipe sections. The single-unit machine sits on top of the pipe and is clamped into position quickly by a lever. The machine uses no chains, cables, or pulleys and nothing passes under pipe. One man attaches the coupler and joins pipe sections to form a positive seal. Couplers are available in six sizes that handle pipe ranging from six to 16 in. in dia.—E. H. Wachs Co., 1527 N. Dayton St., Chicago 22, Ill.



### Rock Ripper for Pipeline Work

Ateco's new tractor-mounted rock ripper is designed for ripping ahead of pipeline trenchers. It consists of a hydraulically operated tool beam that carries a single ripper shank. A swing bracket enables the shank to pick out weak spots in rock. It is available as an attachment for present Ateco rippers or as a complete assembly. The attachment takes 24 or 48-in. shanks and the complete ripper assembly has a 72-in. shank.—American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.



### Portable Megaphone Is Self-Contained

The new transistor-powered Audio Hailer portable megaphone will project speech clearly for over 1/2 mi., according to the manufacturer. The portable megaphone is completely self-contained. It operates for long periods on standard flashlight battery cells. The amplifier uses four transistors to produce a 7-w output. The megaphone, which weighs only 5 3/4 lb complete, has a pistol-grip handle that allows one-handed operation.—Audio Equipment Co., Inc., 75 Harbor Rd., Port Washington, N.Y.



### Loaders Now Pulverize Materials

A pulverizer attachment for its models 82-A and 582 crawler-mounted bucket loaders has been developed by Barber-Greene. These machines now can strip, pulverize, and load in one operation. The pulverizer has a shaft that carries a series of free-swinging short chains. Clay or topsoil is elevated until it falls through the pulverizer. The attachment, located in the discharge hood, swings out of the way when not in use.—Barber-Greene Co., Aurora, Ill.

continued on next page



# 3-WAY SOIL BLENDER!

Here's the one multi-purpose tool every contractor needs to speed his work and make him more money! Solving soil problems is a specialty of Rome Disk Plowing Harrows. Have you ever encountered these problems?

**1 Dead, dry dirt on the fill** that blades like ashes and packs like sawdust? Wet it down with your water trucks, then mix it deep with a Rome Disk Plowing Harrow to put it in good shape for specified compaction.

**2 In-place materials to mix?** Soil cement materials, stratas or lifts in fills can be readily turned into a compact, homogeneous fill by mixing and pulverizing with a Rome.

**3 Too wet to work?** Blend wet soil with dry materials, plow deep with a Rome Disk Plowing Harrow to dry out your fills and cuts.

*See your Rome Dealer for complete details — he is also your Caterpillar Dealer.*

**ROME PLOW COMPANY, Cedartown, Georgia**

**Rome Disk Plowing Harrows**

REG. U. S. PAT. OFF.

## EQUIPMENT NEWS...

*continued*



**PORTABLE SAW**—The new Target model 75 concrete saw has an easily removable cutting head so that the unit can be transported in the trunk of a car or by a small pick-up truck. It takes only seconds to remove three hinge pins that connect the cutting head to the frame. The 9.2-hp saw is light enough to lower into a basement and it can be carried easily to a roof deck. Designed primarily as a utility saw for concrete contractors, it can also be used efficiently on repair or patch work on streets or air strips. The saw cuts dry with Target reinforced abrasive blades or wet with abrasive or diamond blades.—Robert G. Evans Co., 6024 Troost Ave., Kansas City 10, Mo.



**BRAKE FLUID**—Wagner Electric Corp. has developed a new dispenser for use with its recently introduced Lockheed heavy-duty brake fluid. A dispenser will be included with five one-gal cans of the new brake fluid and the





Lima Type 44-T Truck Crane setting concrete forms for overpass at Fort Washington Interchange of Pennsylvania Turnpike. Machine is owned and operated by F. A. Canuso & Sons, Philadelphia, Pa.

## The LIMA Type 44-T... "a quality crane in every respect"

*says F. A. Canuso & Sons, Inc.*

"I've always had a high regard for Limas," says Julian Canuso of F. A. Canuso & Sons, Philadelphia contractors, "because of their fine design and rugged construction. We've had our Lima Type 44-T Truck Crane for 2 years now, and it has proved to be a quality crane in every respect. It's been kept busy during the past few months on this Turnpike job, mostly working on soft terrain, and we like the way it can get around and handle the heavy loads. Our experience with a real 'old-timer' will give you an idea why we think Limas have what it takes. About 5 years ago we bought a Lima Type 601 that had been working in the hard coal region for 10 years. To bring it up to date, we installed a new diesel engine, and we expect to get many more years of service

from it. You just don't seem to be able to wear it out."

Mobile, rubber-mounted Limas are available on 6 x 4, 6 x 6, 8 x 4, and 8 x 6 carriers with capacities up to 70 tons; they will go anywhere a truck will go with speeds up to 25 mph. If mobility is not a factor in your operation, you can get crawler-mounted Limas that will handle loads up to 110 tons. And readily interchangeable front end attachments—shovel, dragline and pullshovel—give Limas the versatility you need for any of your heavy lifting and digging jobs.

Your nearby Lima distributor will be glad to give you the whole story on Lima quality. Get in touch with him today or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN · LIMA · HAMILTON**

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment





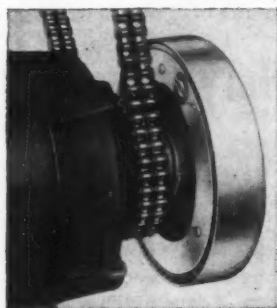
## **NEW DRIVE FOR COST REDUCTION**

Whitney's new, *fatigue-resistant* Processed Roller Chain Drives are cutting equipment maintenance costs everywhere . . . taking the toughest shock loads and punishment that construction schedules can hand out.

Here's why . . . the exclusive Whitney Process offsets *excessive operational stresses* in the chain — assures new durability and freedom from downtime. Every chain component is designed, heat treated and assembled to meet your specific service standards.

Another important design advance is Whitney's High-Capacity Roller Chain. This new, *compact* chain drive may provide the solution where space limitations and higher horsepower requirements are important factors in power transmission.

Whitney Field Engineers will gladly provide practical recommendations on all of your chain and sprocket design problems. And you can rely on your nearby Whitney Chain Distributor for fast service from a complete line of ASA roller chains, conveyor chains and stock sprockets.



### **Heard About Whitney-Tormag Magnetic Drives?**

For complete motor overload protection, cushioned starts and high efficiency, ask about our new permanent magnet, self-contained power transfer unit. Available in 1, 2, 3 and 5 H.P. units as stock items, additional sizes up to 15 H.P. will follow . . . Write for literature: Box 316AJ-TOR.

# Whitney

**CHAIN COMPANY**

316AJ HAMILTON STREET, HARTFORD 2, CONN.

ROLLER CHAIN • CONVEYOR CHAIN • SPROCKETS • FLEXIBLE COUPLINGS • WHITNEY-TORMAG DRIVES

## YES! YOU CAN BUY DIRECT SEND US YOUR ORDERS FOR NEW ROTARY SWEEPER BROOM CORES

\$49.50 We Manufacture All Sizes



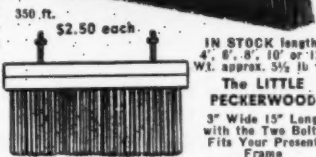
• DETROIT-HARVESTER  
• FORDSON  
• GRACE (3 TYPES)  
• HOUGH  
• HUBER  
• LULL  
• LITTLEFORD  
• LITTLE GIANT  
• MELI (M-B) BLUMBERG  
• ROSCO  
• SPEARSWELL  
AND MANY OTHERS  
ALSO CORES MADE TO  
YOUR SPECIFICATIONS

**Suggestion — TO FAR AWAY USERS  
ORDER CORES ONLY WITHOUT ANY  
FIBRES BUT READY TO FILL**

Also Furnished Filled With Palmyra-Hickory or  
Bass Fibres or Even Spring Steel Wires  
**WE SHIP WORLDWIDE—IMMEDIATELY**

**ROAD BUILDERS—IT'S SENSATIONAL!  
PECKERWOOD**

**C-O-N-T-I-N-U-O-U-S**  
Drag Broom Levelers with Spring Steel Wires  
or Bass Fibres Six inches Wide and Length to  
12 Feet and Also Three inches Wide  
No Frame Required



350 ft. \$2.50 each

IN STOCK lengths  
4', 6', 8', 10' or 12'  
Wt. approx. 3 1/2 lb ft

**The LITTLE  
PECKERWOOD**

3" Wide 15" Long  
with the Two Bolts  
Fits Your Present  
Frame

ALSO MADE C-O-N-T-I-N-U-O-U-S

**KENNEDY'S  
VAN BRUSH MFG. CO. INC.**  
SINCE 1928  
327 S. West Blvd., Kansas City, Mo.

## NEW 3/4-ton Pull-A-Way Added to **WRIGHT** TYPE "C" LINE!

**FOUR SIZES • 3/4,  
1 1/2, 3 and 6 Tons**

### FEATURES

- Lubricated for life
- Hooks are drop-forged
- Special alloy-steel chains
- Chain sheaves of drop-forged alloy steel
- Gear teeth cut to precision limits
- Load brake is dependable and safe
- Weights:  
3/4-ton, 14 lbs.  
1 1/2-ton, 23 1/2 lbs.  
3-ton, 36 1/2 lbs.  
6-ton, 63 lbs.

**New 3/4-ton model  
• VERSATILE  
• LIGHTWEIGHT**

Write to York, Pa., office for  
complete information

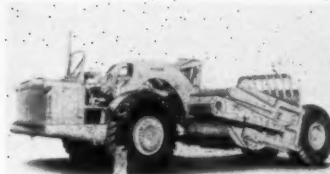


**Wright Hoist Division  
AMERICAN CHAIN & CABLE**

York, Pa., Bridgeport, Conn.

## EQUIPMENT NEWS... continued

package will sell at the regular six-can carton cost. With the dispenser mounted on a one-gal can, the operator can replenish most brakes with a single stroke of the pump handle. Fluid is dispensed with finger-tip control that cuts down waste and contamination. A small ball on the nozzle retracts to release fluid. When the ball is released it seals the line and the dispenser is ready for the next application.—**Automotive Division, Wagner Electric Corp., 6,400 Plymouth Ave., St. Louis 14, Mo.**

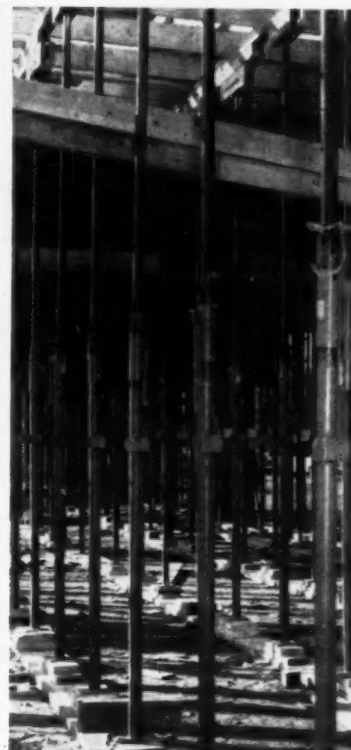


**CARRIES MORE**—Euclid has increased the struck capacity rating for its model S-18 scraper from 18 to 21 yd. Heaped load is now 24 yd at 3:1 and 30 yd at 1:1. The power train of the new S-18 tractor includes a 325-hp engine with a four-speed Torquematic Drive and converter lock-up. No-Spin differential is available as optional equipment. The scraper bowl has a four-section reversible and adjustable cutting edge. All scraper operations, including the bowl, apron, and ejector, are controlled by hydraulic lever action. Standard tires are 27.00-33.—**Euclid Div., GMC, Cleveland 17, Ohio.**



**CHOICE OF HEADS** — Stow's new model DU electric vibrator is available with either a 1 1/2 or

## SAVES DAYS WITH WACO ALL-STEEL SHORES



Contractor: Smith Construction Co.  
Job Site: New Haven, Connecticut

## Exclusive New Waco SPEEDSET Adjusts in Seconds!

Test Waco all-steel Shores against others on the same job . . . like the Smith Construction Company did in New Haven . . . and you'll see for yourself how Waco saves days and dollars! That's because Waco Shores are faster to set up, faster to take down and faster to handle from start to finish.

Only three shore size's handle all your shoring jobs. Choice of plate or "J" type head to fit every shoring requirement.

### WACO MANUFACTURING CO.

5251 W. 130th Street  
Cleveland 30, Ohio

Name \_\_\_\_\_  
Street \_\_\_\_\_  
State \_\_\_\_\_

Or see the yellow pages of your telephone directory for your nearest WACO dealer.



$\frac{7}{8}$ -in. dia vibrator head and with a choice of flexible shafts ranging from 2 to 21 ft long. The vibrator is driven by a lightweight  $\frac{3}{4}$ -hp universal motor that produces 12,000 vibrations per min. Because of the small size of the vibrator heads, the unit is ideal for jobs with narrow forms, precast work, or on jobs where reinforcement is closely spaced. Both heads have duplex ball bearings

at each end to support the eccentric weight. They are pre-lubricated and sealed for life. The motor, which weighs only 9 lb, has a trigger switch in the handle.—Stow Mfg. Co., Shear St., Binghamton, N.Y.

**STEADY POWER**—J. I. Case's new low-priced, wheel-type model 420 loader features a power-boosting torque converter. It



is one of the smallest tractors available with converter drive. A lever on the dash allows the operator to switch the machine from torque converter drive to direct drive when traveling cross-country or over highways. According to the manufacturer, the torque converter actually doubles the amount of push-power available in low working speeds. It also increases the 420's traction because the operator can apply extra power steadily when digging the bucket into ground or a stockpile. The torque converter also allows a more uniform delivery from the tractor's 21-gpm hydraulic pump because it prevents the engine from being pulled down by heavy loads. The 420 loader develops 4,600 lb of break-out force. The standard bucket is 63 $\frac{3}{4}$  in. wide and it has 25-deg rollback and 90-deg forward roll at ground level. An exclusive bucket self-leveling device reduces spillage.—J. I. Case Co., Racine, Wisc.



### JOB-SITE CASTING REDUCES DESIGN-TO-COMPLETION TIME OF PRESTRESSED BRIDGES

Immediate Delivery of Materials  
Important Factor in Early Completion

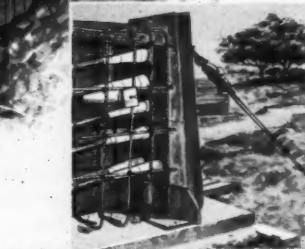
Highway departments in several states have already completed a number of prestressed highway bridges utilizing the Prescon System of post-tensioning.

For the contractor, use of the Prescon System assures tendons delivered to the job site, completely assembled, clearly identified and ready for the forms; a Prescon representative to instruct his men in placing and stressing the tendons, using stressing equipment—provided by Prescon.

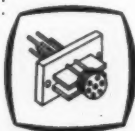
The reduced maintenance and the added design beauty of longer spans, gives increased significance to these post-tensioned, prestressed bridges.

The Prescon System of post-tensioning is being used in prestressed structures of many types because of its numerous advantages to the contractor, architect or engineer, and owner. Your copy of the new folder on lift-slabs is available now... write for it today.

For the complete Prescon story, write for the new brochure.



1. Santa Cruz River bridge, Tucson, Ariz.
2. Detail of grouted tendons in form for South Carolina bridge.
3. Stressing jack in place, and hydraulic pressure being applied. Stressing equipment and training supervision are furnished.



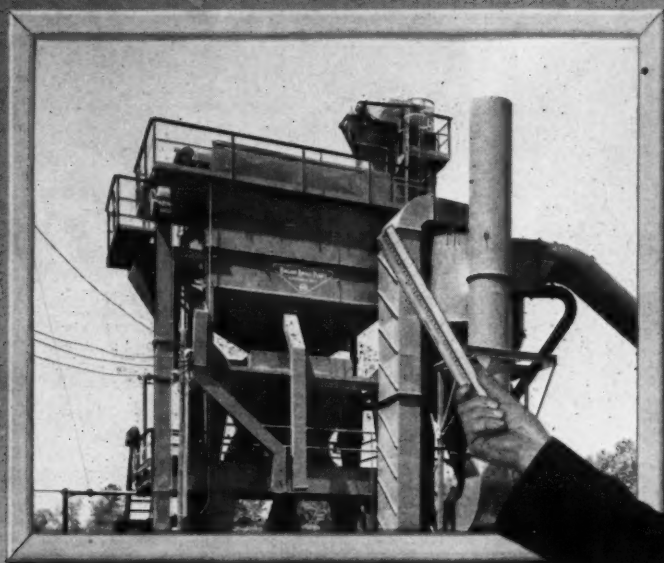
## THE PRESCON CORPORATION

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CORPUS CHRISTI, TEXAS

BRANCH OFFICES: DENVER • LOS ANGELES • ATLANTA  
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**UNIQUE BATTERY**—Individual cells of Scramton's new Cello-matic battery can be replaced as they go dead—thus eliminating the need for throwing away the entire battery because one cell fails to operate. The separate cell principle also permits a free flow of air to cool all four sides of each



**"We decided to use only the very best equipment...where sizing is concerned this is the SYMONS SCREEN"**

says Mr. A. W. BOLLARD, V.P.  
Bollard Asphalt Plant Division  
of Colonial Iron Works Company

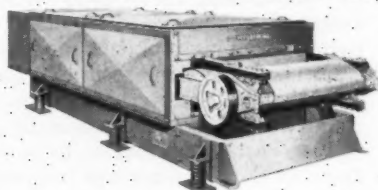
The Bollard Asphalt Plant Division of the Colonial Iron Works Company has joined the steadily growing list of prominent asphalt plant builders who standardize on Symons Horizontal Vibrating Screens for high capacity, accurate sizing of bituminous materials.

Bollard, with an intimate knowledge of the asphalt plant industry gained through 38 years of experience as draftsman, designer, chief engineer and vice president of one of the pioneer builders has this to say, "I have always been impressed by the performance, low maintenance and operating costs of

*Symons Horizontal Vibrating Screens. When I started to manufacture plants under my own name, I gave a great deal of thought and consideration to the selection of screens. I decided then to use only that equipment, which in my judgment, is the very best in the field. As far as screening equipment was concerned, this is the SYMONS Screen . . ."*

Here, then, is an outstanding vote of confidence for Symons Screens, from an experienced asphalt plant manufacturer. On your next plant, be sure to specify SYMONS®.

SYMONS . . . a registered Nordberg Trademark known throughout the world.



**SYMONS "TYPE F" HORIZONTAL VIBRATING SCREENS . . .** available in various deck arrangements for multiple separation, including intermediate relief decks. These heavy duty screens provide higher capacity, more accurate sizing of multi-aggregate bituminous mixes. With drive unit, bearings and motor located outside the screen housing, away from dust and heat, maintenance is extremely low. By being mounted horizontally the Symons Screen requires less elevator height and lower headroom.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

**NORDBERG**

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S458



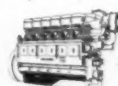
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**FAST, EASY CASTS . . .** a powerful drag . . . accurate bucket handling helped this American set a rugged pace for hard working crews rebuilding raceway banks in

Nebraska. Once the banks were filled and smoothed, they were covered with brush to prevent further washing away of the loose sandy soil of the region.

## RACEWAY BANK EROSION CONTROLLED

**American ½-yard Dragline Rebuilds 2000 Feet of Bank in 8 Hours!**

In the raceways below hydro-electric dams, bank erosion is a big problem because tailrace water level and speed vary greatly. To repair and control erosion damage to its raceways, the Loup River Public Power District at Columbus, Nebraska, put an American 100 Series Crawler on the job. The dependable American proved its production ability by rebuilding up to 2000 feet of bank in a shift! To prevent further erosion, a mattress of brush—tied together with wire rope—was laid over the bank and anchored with scrap auto bodies.

This versatile 100 Series American—the third now in use by Loup River Power—is assigned general

earth moving, ditch cleaning, erosion repair and pile driving jobs. With any front—hoe, shovel, dragline, clamshell, magnet or crane boom—American 100 Series machines have perfect balance that's achieved by efficient design. It's a feature that eliminates power and profit-robbing deadweight—cuts total weight to reduce stripping problems for highway travel.

Owners' operating records *prove* that the tough, lower cost 100 Series cranes and excavators give maximum work-ability at consistently low operating and upkeep costs. Distributors have complete technical facts on the big American line with capacities that start at 12½ tons on rubber . . . ½-yard on crawlers!

EXCAVATORS-CRANES  
to 2 yds.—50 tons

LOCOMOTIVE CRANES  
to 130 tons

DERRICKS-HOISTS  
to 800 tons

REVOLVER CRANES  
to 400 tons

### AMERICAN HOIST

and Derrick Company

St. Paul 7, Minnesota

AMERICAN HOIST  
PACIFIC COMPANY  
Special materials  
handling equipment

CROSSBY-LAUGHLIN  
DIVISION  
Drop forged fittings  
for wire rope-chain



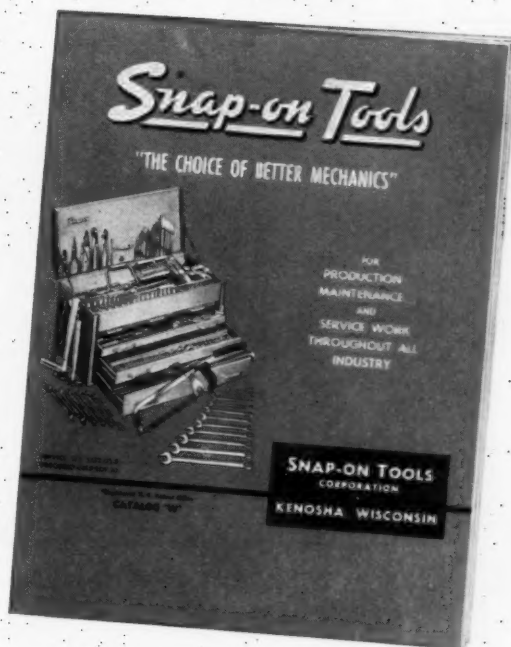
**EQUIPMENT NEWS...**  
continued

cell, a feature that reduces heat failures. The cells, constructed of non-porous polystyrene, are held in a rugged polyethylene frame. Both cells and frame are said to be stronger than conventional hard rubber or composition batteries. They will not crack or warp even at extreme temperatures, and because they are non-porous, they will not permit electrical charges to leak out. The Cellomatic uses selenium in combination with battery acid or electrolyte. Selenium, one of the newer metals, is said to prolong cell life by reducing the shedding action of active particles from battery plates. These particles normally build up at the bottom of cells and in time they destroy the battery. Because selenium also cuts down natural resistance to an electric current, it permits a faster charging rate at lower temperatures because the electric current travels faster. Although the price of Cellomatic batteries is higher than that of conventional batteries, the manufacturer claims that the large fleet owner can save money because he needs to replace only one cell in the event of battery failure. The new battery is now available in passenger car sizes and larger models will be available shortly.—**Scranton Cellomatic Battery Corp., Archbald, Penn.**



**MORE CAPACITY**—Horsepower has been increased to 335 and capacity has been boosted to 21 yd struck and 28 yd heaped on the LeTourneau-Westinghouse model B Tournapull. The new standard engine is a six-cylinder, four-cycle Cummins turbocharged diesel. A combination of the turbocharger and a newly designed fuel pump provides improved acceleration characteristics. The power increase is reflected in higher speeds. The Model B with a standard step-gear transmission now has a top low-range speed of 20.7 mph and a top high-range speed of 30.1 mph. Horsepower

# Send for the new... *Snap-on* catalog



**112 pages packed with information and pictures — over 4,000 quality work-saving tools for on-the-job maintenance or in-the-shop overhaul.**

Your copy of the new *Snap-on* tool catalog is now ready. It puts the complete *Snap-on* line right at your finger tips. Use it as a ready reference and guide.

You'll find full details on the wide range of high-quality hand tools — wrenches of all types and sizes, including special sockets for use on electric and pneumatic impact guns and a wide range of maintenance tools your mechanics need to service both light and heavy equipment.

There's page after page of *Snap-on* shop equipment — Anal-O-Scope engine analyzer; complete range of testing equipment; hydraulic service jacks; pullers; torque wrenches; complete descriptions of *Snap-on* tool chests and cabs.

Ask your *Snap-on* man or write us for your free copy of useful catalog "W."

## NATIONWIDE TOOL SERVICE

With branch offices and warehouses located in 58 cities throughout the U. S. and Canada, *Snap-on* can serve you wherever you are.

**SNAP-ON TOOLS**  
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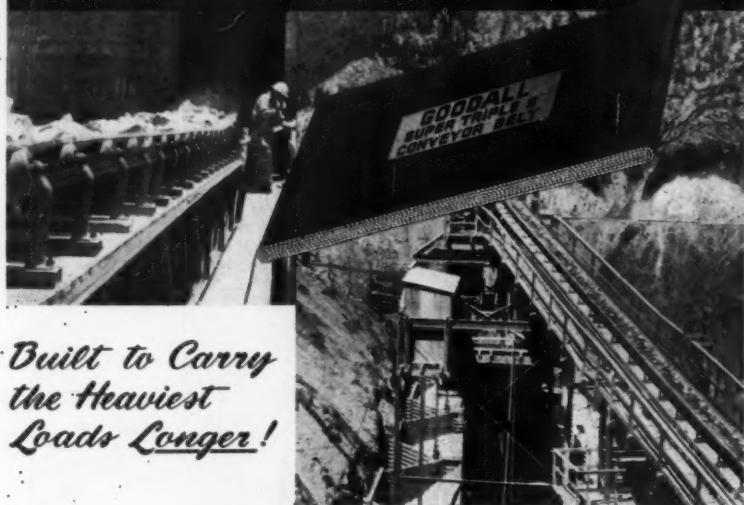
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# "SUPER TRIPLE-S"

*The Super-Strong, Super Durable*

## CONVEYOR BELTING



*Built to Carry  
the Heaviest  
Loads Longer!*

Performance records on many of the Nation's largest construction jobs—dams, tunnels, reclamation projects—are proof that "Super Triple-S" is unmatched for endurance under heaviest loads on the longest passes. It is the belt to rely on for uninterrupted service where a shutdown for repairs or replacement would seriously delay the entire job.

"Super Triple-S" is built to handle crushed stone up to 10"; aggregates; and other highly abrasive bulk materials, wet or dry, particularly on long center hauls where tension is high and extreme flexibility is required. Weather-resistant cover. Tensile strength, friction and other details determined by specific requirements.

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**"76" GRADER BELTING.** For many years Contractors have used "76" Grader Belts to "keep the job moving." Built to specifications developed especially to assure long, low-cost performance on heavy-duty Elevator Road Graders. Widths 18" to 48", 4-ply.

**"WEAR KING" MUCKER BELTS.** Developed especially for use on Conway Mucking Shovels in tunnel excavating, and employed on most of the largest modern tunnel jobs. Construction provides highest resistance to continuous tension, terrific load impact, small-pulley flexing and ply separation.

**"If it's GOODALL it MUST be Good!"**

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## GOODALL Rubber Company

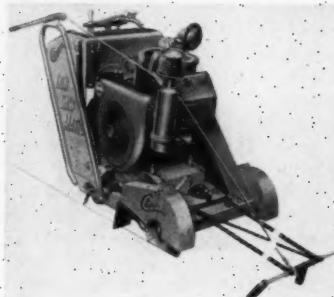
GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.  
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## EQUIPMENT NEWS...

continued

of the optional engine, the Detroit Deisel six-cylinder, two-cycle diesel, has been increased to 325 hp. The 2-yd increase in struck capacity was accomplished by making only minor modifications, according to LeTourneau-Westinghouse. Features of the bowl include a smooth, clean interior design; an extremely flat bowl floor position with only a one-deg tilt when loading; and a 7-ft apron lift opening. The "B" Fullpak scraper is interchangeable with a 35-ton rear dump and a 30-ton crane. List price for the B Tournapull with the Fullpak scraper is \$54,123, fob, Peoria.—LeTourneau-Westinghouse Co., Peoria, Ill.



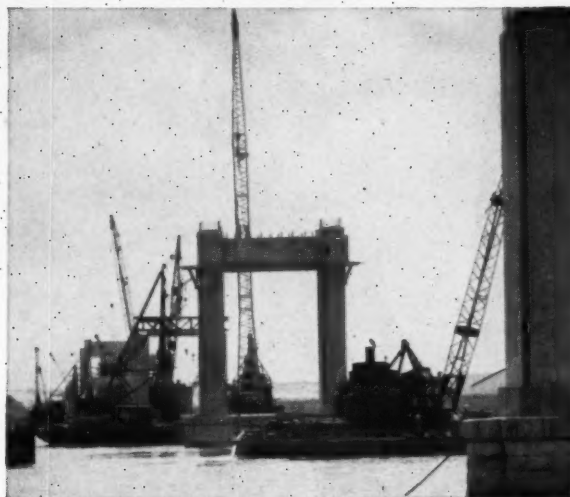
**MORE POWER**—Clipper's new model C-300 concrete saw has 20% more power than the model 250, which it replaces in the Clipper line. Designed for heavy-duty cutting jobs on highways or airports, the saw cuts at speeds of up to 22 fpm. Besides the 20% increase in power, the new saw has a more powerful transmission and the number of the V-belts that drive the blade shaft has been increased from four to five. The C-300 also features a clutch-type water pump that eliminates the need for disconnecting the water pump belt when running the saw dry or when it idles for extended periods. Clipper's patented three-point blade suspension, which prevents binding, twisting, or drifting in the cut, is standard on the new saw. Power is supplied by a 30-hp Wisconsin gasoline engine. Other features include Clipper's positive screw feed, which raises and lowers the blade smoothly in and out of the cut; an adjustable front axle that makes it possible to adjust for lead-off; an improved front pointer that in-



**PIPELINE**



**HIGHWAY**



**BRIDGE**



**EXCAVATION**

## Seeing a Hartford engineer before you bid may mean you get the job

Here's a sound reason for placing your insurance with the Hartford Group: *It puts Hartford engineering facilities at your service.*

The Hartford engineer will be familiar with the many risks—usual and unusual—encountered in contracting operations. He will help you detect and eliminate hazards which can cause costly accidents . . . injuries . . . delays . . . poor public relations. His cooperation on your advance planning will be of real aid in foreseeing and avoiding conditions which otherwise may run up your costs and cut down your profits.

Over the long pull you will find Hartford engineering service valuable in side-stepping trouble, maintaining efficient work schedules, reducing losses through damage to equipment and materials, and earning favorable insurance rates. These benefits can add up to give you a margin of advantage that your competitors may not have. It will often be decisive in

obtaining a higher percentage of the jobs for which you bid.

Hartford's coast-to-coast staff of highly trained personnel can give you fast, efficient service on your insurance and bonding needs. For the full story call your local Hartford Group Agent, or ask your own insurance broker.

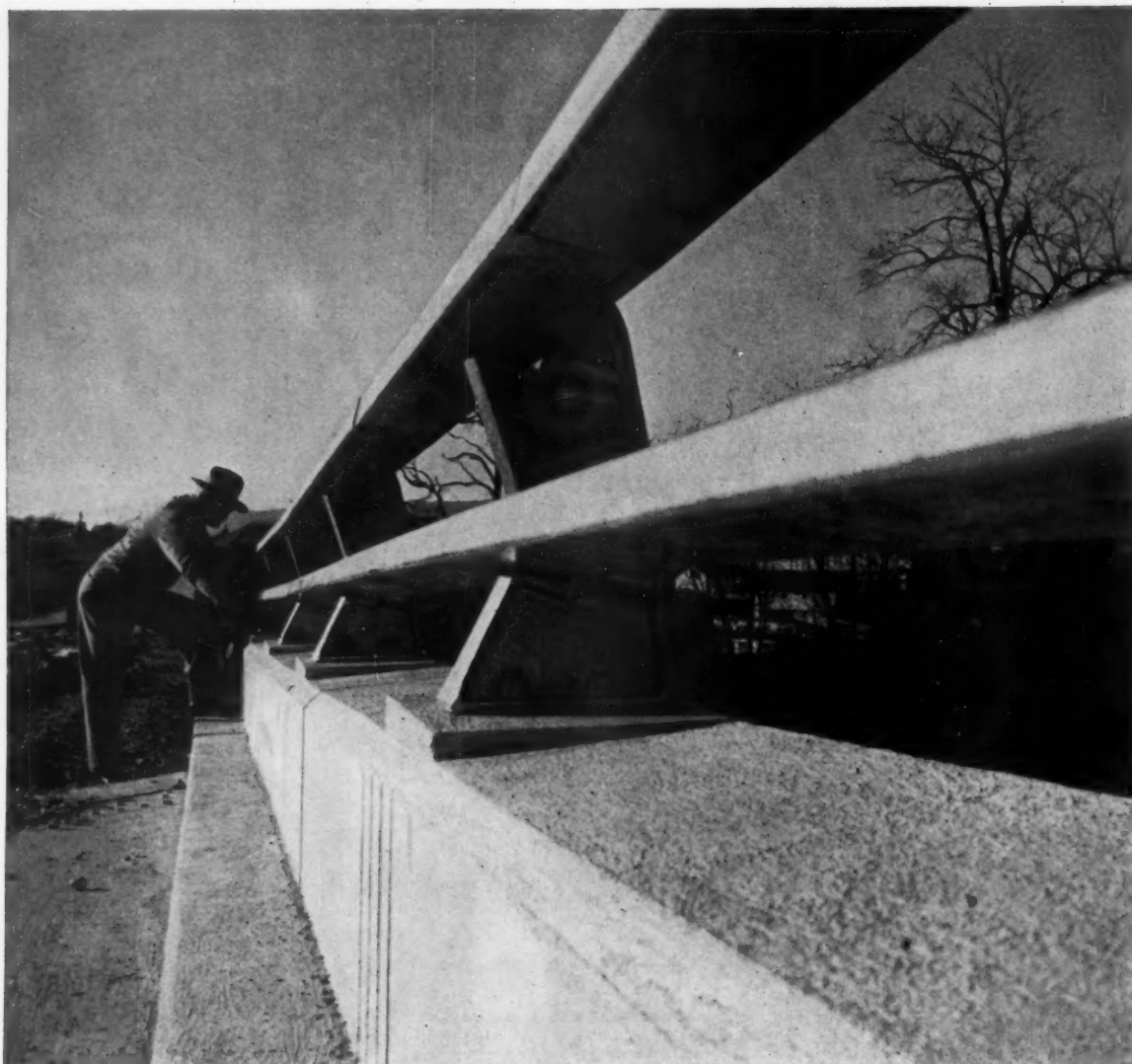
Year in and year out you'll do well with the

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New York Underwriters Insurance Company, New York 38, New York  
Northwestern Fire and Marine Insurance Company  
Twin City Fire Insurance Company, Minneapolis 2, Minnesota







## New! Perfect Vision Bridge Rail

### Handsome, Sturdy, Easy to Install

Bethlehem's new Perfect Vision bridge rail is attractive, sturdy and easy to install. Steel box channels and malleable iron posts arrive at the bridge site ready for quick installation. There's no welding or riveting necessary; after placing posts in position, only a few nuts must be tightened.

The new rail is made in four styles: one- or two-rail models for mounting on a parapet, and three- or four-rail designs for a curb or sidewalk.

Rails are furnished in any length from 7 to 20 ft. They are 2 x 5 in. box channels cold-formed from  $\frac{1}{8}$ -in. steel and galvanized in accordance with ASTM specification A-123.

The galvanized posts are spaced on 9 ft 6 in. centers and connected to the parapet by four  $1\frac{1}{8}$  in. anchor bolts set in the concrete. The railing exceeds the requirements of the 1953 AASHO Specifications for railing loading. And when rails are damaged, they're easily replaced.

Get full details on this sturdy, handsome bridge rail, with "see-through" design. Just phone or write the nearest Bethlehem sales office.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation  
Export Distributor: Bethlehem Steel Export Corporation

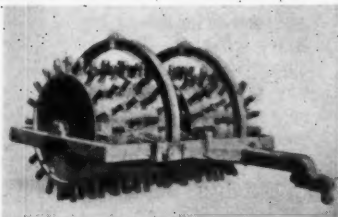


# BETHLEHEM STEEL

## EQUIPMENT NEWS...

continued

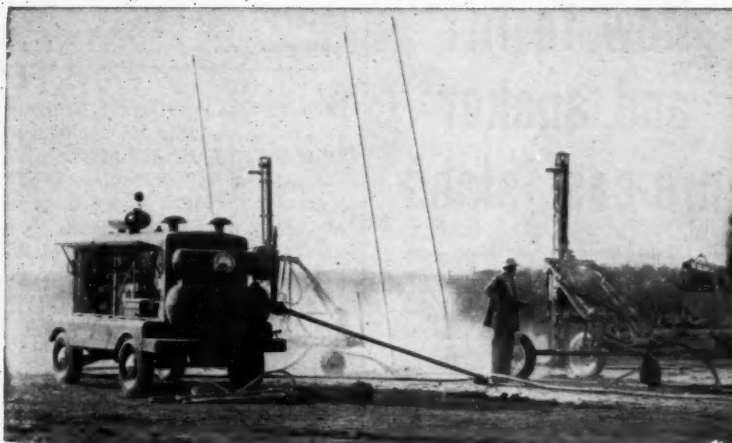
sure's more accurate alignment; and a new, more accurate depth gage.—**Clipper Mfg. Co., Suite 143, 2800 Warwick, Kansas City, Mo.**



**BIG SHEEPSFOOT**—Southwest's new arch-type model 55 sheepsfoot roller is designed to be used in tandem behind big tractors in the D9 class. The arch-type frame is said to allow close and accurate control of the rollers when working in tandem applications. The heavy-duty, fully oscillating, double-drum tampers are available with either removable shoes or with wedge-type solid feet. Light and medium duty models also are available. — **Southwest Welding & Mfg. Co., Construction Machinery Div., Alhambra, Calif.**



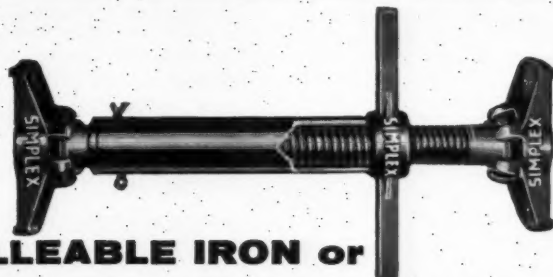
**HYDRAULIC DRIVE**—An all-hydraulic drive system developed by Morgen for a belt conveyor designed for building contractors provides close control of the belt at all times. It also offers a great variety of both forward and reverse speeds. The hydraulic motor is located at the top of the conveyor and it is coupled directly to the head pulley. Power is transmitted to the motor through steel hydraulic tubing mounted inside the trough. A belt tightener is located in the tail pulley mounting, and screw-type belt adjustment controls are on the



## Only Jaeger delivers 600 cfm at 1650 rpm

Although powered with the same GM 6-71 diesel engine as the Jaeger "600", other compressors run 150 rpm faster to produce the same 600 cfm of air. In 8 hours' continuous operation a Jaeger averages 72,000 fewer revolutions, saves miles of engine piston travel and many pounds of fuel. Jaeger "125", "250" and "365" sizes are comparably efficient. See your Jaeger distributor for complete cost-saving data, or request Catalog JC-7.

**THE JAEGER MACHINE CO., 800 Dublin Ave., Columbus 16, Ohio**

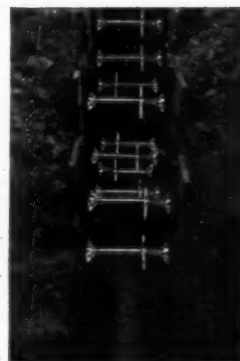


## MALLEABLE IRON or DROP FORGED?

Rugged dependability suggests that you insist on the best—Simplex drop forged steel trench braces.

Ball and socket joints at each end for tight grip at any angle. Blunt lever nuts or 3-way nuts—nail holes in both screw and butt ends. Furnished with or without pipe.

Simplex drop forged steel trench and timber braces *cost no more* and better eliminate the danger of cave-ins and costly re-digging.



**TEMPLETON, KENLY & COMPANY**  
2509 Gardner Road  
Broadview, Illinois

# How to lift and anchor pre-cast slabs

Pouring the slab is only part of the job... it's still necessary to get it into place. You have to select, place and use proper tilt-up accessories to do this. With the proper Sure-Grip accessories, you handle slabs easier, safer and more economically. Cranes aren't tied up, men aren't standing around and slabs aren't damaged. Sure-Grip accessories will be your biggest "help" on your job.



Single Pick-Up Insert

For use with 1", 1 1/4" and 1 1/2" coil bolts. Helix coil forms the nut and specially chased coil bolts are threaded into it. Safe loads in tension for 3,000 PSI concrete are 7,000 lbs. for 1" bolt, 8,000 lbs. for 1 1/4", and 9,000 lbs. for 1 1/2" bolt. Double pick-up inserts using two 1" coil bolts 12" on centers have 11,000 lbs. safe load.



Double Loop Insert

For use in the edge of the slab. Safe working loads in shear up to 6,000 lbs. with 1" bolts, lifting angles and 3,000 lb. concrete.

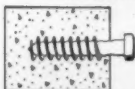


Brace Anchor

All Sure-Grip anchors set only 1/4" below the slab face. They give anchorage for braces in both the slab to be lifted and the floor slab on which the base of the brace rests. Types available for use in slabs to be raised, formed floor slabs, floor slabs poured on fill and where braces are attached to the underside of slab to be raised.

Sure-Grip also makes temporary slotted setting studs, lifting angles and slab braces.

## Screw Anchors and Bolts



Used for temporary anchorage for steel tunnel forms, false work support brackets, cantilever steel

forms for gravity dams, etc. Also for permanent anchorage for cleats, fenders, column bases, seat brackets and for lifting concrete slabs, beams and piles. Bolts can be removed and reinserted.

**FREE** — Mail the coupon below for 48 page illustrated catalog of concrete accessories and name of your nearest Sure-Grip dealer.

**THE DAYTON SURE-GRIP & SHORE CO.**  
525 Kercher Street, Miamisburg, Ohio  
Without obligation, send me your free 48 page catalog and the name of my nearest Sure-Grip dealer.

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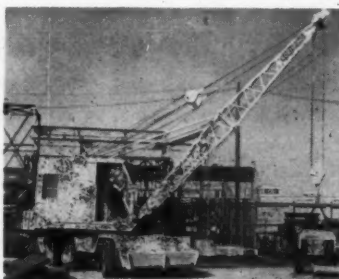
## EQUIPMENT NEWS...

continued

head and tail pulleys. The conveyor is available in 24, 32, or 40-ft lengths. Height of the discharge end is continuously adjustable through a worm-type elevating winch that raises to a maximum elevation angle of 45 deg. The tubular steel undercarriage is equipped with swivel rear wheels and a front steering wheel. The conveyor can carry any building material, including concrete, to a height of 28 ft.—Morgen Mfg. Co., Yankton, S. D.



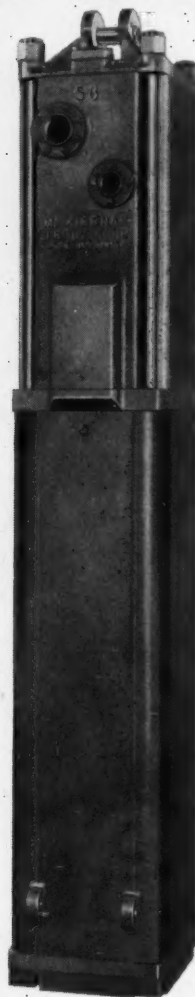
**PROTECTS LINES** — Wherever water or air lines or electrical cables are liable to be crossed by traffic, Calumet's new interlocking hose and cable bridges will guard against damage. Produced as a steel casting, each unit weighs about 32 lb. Each bridge has integrally cast interlocking joints so that several units can be combined without tools to cover the roadway.—Calumet Steel Castings Corp., 1636 Summer St., Hammond, Ind.



**MOBILE CRANE**—Travel speeds up to 18 mph and a 25-ton lifting capacity are features of Koehring's new model 305 Cruiser crane. Roll-out-type outriggers with screw jacks and pedestals are standard equipment. The three-axle carrier can support booms up to 100 ft and 15 and 30 ft jibs are available for high lift service. Safety boom-limit stops and powered boom lowering are standard. Lugs on the pendant-suspended boom permit it to be

# SINGLE ACTING PILE HAMMERS

Heavy blows — low rate of speed — for driving big, heavy piles steadily and surely — and for driving any pile through heavy, rubbery soil — Sets and meets single-acting specifications—write for details!



**McKIERNAN-TERRY CORP.**  
110 RICHARDS AVE., DOVER, N.J.





A-W Hydraulic Crane shown bending pipe-type cable at Wright-Patterson Air Force Base, Dayton, Ohio. Two hydraulic outriggers on the sides of the crane hold the pipe while the boom pulls it up into the desired curve.

## A-W Hydraulic Crane proved excellent on high-precision electrical project

says Helldoerfer-Castellini, Dayton, Ohio

One of the pioneers in laying underground pipe-type cable, Helldoerfer-Castellini recently completed its largest installation of this kind at Wright-Patterson Air Force Base. The project, which involved laying 10,000 ft. of new cable, cost \$2.5 million. Putting the 69,000 v line underground removed the serious hazard of overhead line interference, greatly increasing safety in landings and takeoffs.

**The company informs us:** "For the single crane we needed to handle this

pipe, we made a thorough study of the field, and chose an A-W for several reasons: it is more adaptable and maneuverable than other cranes; it is safe around substations; it has no long cables, the possible snapping of which would be very dangerous; its dependability assures low downtime.

"The 6-in. cast iron pipe sections were 40 to 45 ft. long and carried conductor cable drawn into them before being lowered into the trench. Unusual care was required in handling, bending

and installing these pipe sections because of a special insulation to protect them from corrosion.

"The A-W crane proved its capacity for handling pipe, fittings and material for the towers with precision and safety—both to personnel and the things it carried. The only alternative was rental of an \$18-an-hour crane. We saved well over \$100 a day by deciding to buy an A-W instead."

For complete details on this installation, write for Certified Gould Report No. 5704.

### Austin-Western

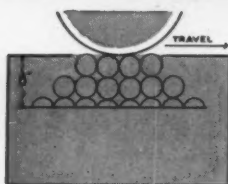
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

**BALDWIN · LIMA · HAMILTON**

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

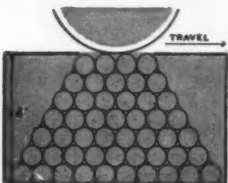


**"I Couldn't Have Done the Job  
Without the CH-30," Says:  
Bill Wehner, Fresno Paving Co.**



**CONVENTIONAL  
STATIC COMPACTION**

Static rollers, relying on weight alone, produce friction forces between soil particles causing bridges to form. Terrapacs break bridges for deep compaction.



**TERRAPAC DYNAMIC  
COMPACTION**

Vibratory energy breaks frictional forces binding soil particles together, allows soil to sift down producing uniform densities at greater depths.

**A Terrapac Roller Hits 95% Modified Density in 2-3  
Passes on Federal Contract in California**

When Fresno Paving Co. was awarded the Federal contract for re-compacting the slopes and bottom of the Madera irrigation canal, between Madera and Fresno, (for the Bureau of Reclamation) William C. Wehner and Frank Pozar chose the CH-30 as the most efficient and economical compaction tool for the job. . . . 80,000 yards of canal lining had to be ripped to a depth of 9"-12" and recompact to 95% Modified density. . . . The soil varied, with a large proportion of it clay, with volcanic ash, shale and large rock present. . . . The slopes were 20-23 feet deep and ranged in angle between 1:1 and 2:1. . . . Using a dragline, the 95% density was obtained in 2 or 3 passes. . . . In addition, the roller "buried" the rock and left a smooth, polished surface. . . . Mr. Wehner also said, "The CH-30 saved the job for us." Testimonials are wonderful, but we suggest that you satisfy yourself by asking for a Terrapac CH-30 demonstration today!

Ad 41-54



**VIBRO-PLUS PRODUCTS, Inc.**

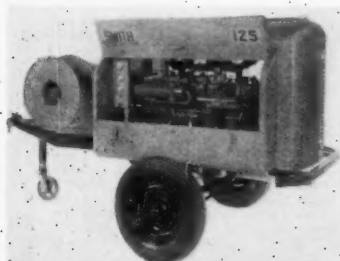
**STANHOPE, NEW JERSEY**

**WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!**

## EQUIPMENT NEWS...

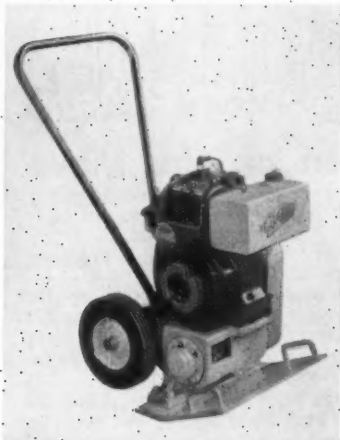
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folded down for traveling. Four gear ratios and a torque converter give variable speeds from 0 to 18 mph. Brakes on all three axles are air-controlled. Automotive-type power steering is standard. —Koehring Div., Milwaukee 16, Wis.



### LOW-SPEED COMPRESSOR —

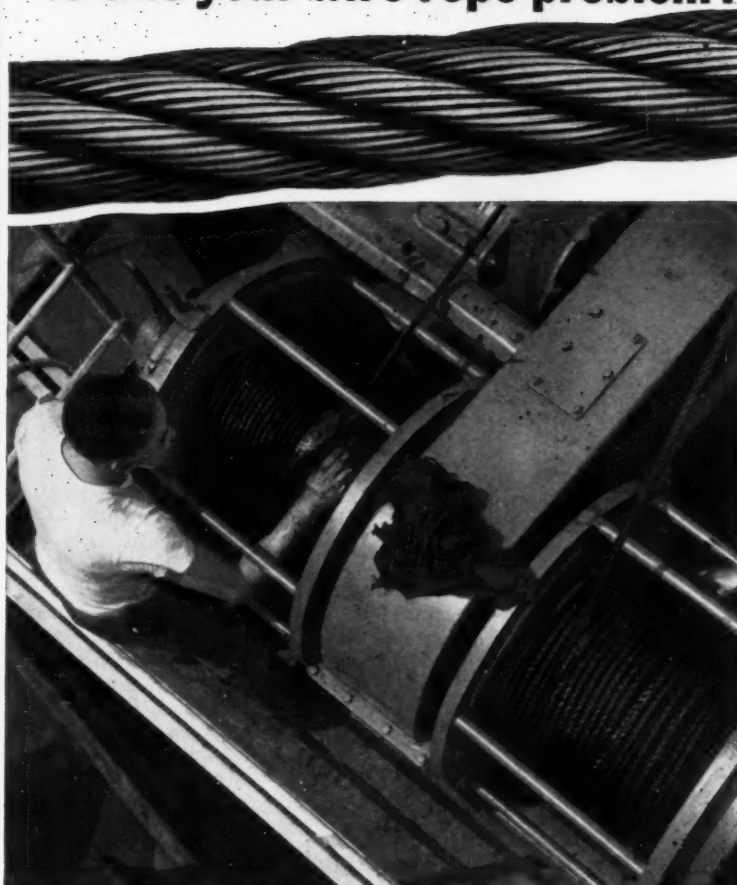
Gordon Smith's new model 125 portable compressor delivers 125 cfm at only 1,165 rpm. The Hercules engine has an industrial-type, six-cylinder block assembly that uses three cylinders for power and three for compression. Features of the compressor include a 12-v electrical system, downdraft carburetion system, a quiet automotive-type exhaust, water-cooled after-cooler, and a regulator to control governed speed of the compressor as air is being used. —Gordon Smith & Co., Inc., Bowling Green, Ky.



**POWERED TAMPER** — Kelley's new self-propelled tamper for packing down earth backfill in trenches and around foundations and piers has an 18-in. standard shoe but a 24 in. wide shoe is also available. When working with black top, a special heater attachment for the shoe is available to

# lubrication...

## is this your wire rope problem?



**Send for free guide to correct methods  
that lengthen service life,  
cut wire rope costs...**

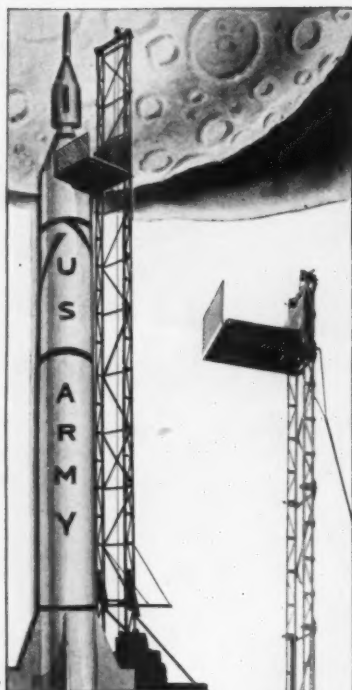
**ASK FOR RED-STRAND SERVICE BULLETIN NO. 103**

To understand the urgent need for correct lubrication of wire rope, think of it as a machine with many moving parts. All its wires and strands are constantly stretching, twisting and rubbing against each other while the rope as a whole is rubbing against sheaves, drums and the like. This creates friction from end to end and wear will be excessive unless the rope is kept in condition with the right kind of lubricant correctly applied. The whole subject is very clearly explained in Service Bulletin No. 103 which is yours for the asking. Write today to H. K. Porter Company, Inc., Leschen Wire Rope Division, St. Louis 12, Missouri.



**H. K. PORTER COMPANY, INC.**  
LESCHEN WIRE ROPE DIVISION





To help prepare the JUPITER C for its flight into history, —the scientists and engineers at Redstone Arsenal chose the BUCK HOISTOWER.



Tow it right to the jobsite.

## the BUCK hoisTower

Self-erecting to a height of 45 ft. The tower can be placed and erected by just one man in 23 minutes.

The HOISTOWER will raise a load of 2500 lbs. to heights of 175 ft. and more. With speeds up to 170 ft. a minute, it is the strongest and fastest portable HOISTOWER in the world.

Concrete Buckets, Poop Decks, Booms, Extra Sections and other Accessories, make it the most versatile and money-making machine a contractor can have.

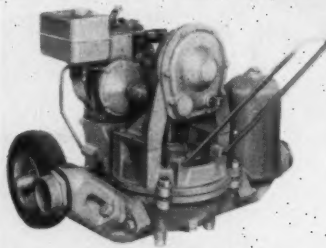
For your nearest dealer or more information—write

**B BUCK** EQUIPMENT CORPORATION  
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Cincinnati 38, Ohio

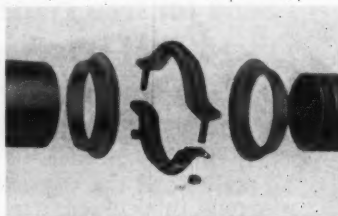
## EQUIPMENT NEWS...

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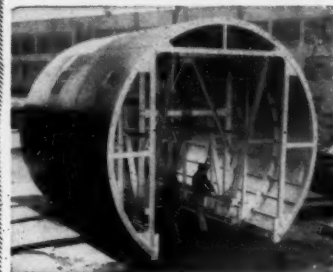
prevent material from sticking to the machine. Called the model 18 KT Power Tamper, the unit is powered by a four-cycle gasoline engine that delivers 3.5 hp. It delivers up to 2,400 one-ton impacts per min. Shock-absorbing handles keep vibration from the operator. —Kelley Machine Div., Wiesner-Rapp Co., Inc., 285 Hinman Ave., Buffalo 23, N.Y.



**WHEEL-MOUNTED PUMP** — A new diaphragm pump with 3-in. hose connections has been added to the Midland pump line. Rated at 4,300 gph, the wheel-mounted pump can handle sludges and solids that might normally clog centrifugal pumps, according to the manufacturer. The pump body is constructed of aluminum alloy to keep weight at a minimum. Shafts and gears are built from alloy steel. The pump can be wheeled around by one man and easily carried by two men. —Midland Products Co., Midland Park, N.J.



**QUICK CONNECTIONS** — Only two bolts must be tightened to make leak-proof, self-aligning tubing connections with Marman's new Servicemaster V-band Tube Joints. Designed for truck and construction equipment exhaust systems and for stationary-engine ducting, the Servicemaster joints are said to be much easier to connect than bolted flanges. When the two bolts are tightened, the joint's V-shaped internal surface exerts an inward radial force. This wedges the two



## MAYO STEEL FORMS SPEED TUNNEL JOBS IN THE PHILIPPINES\*

\*5.2 Diameter Tunnel—Invert Last Ambuklao Project.

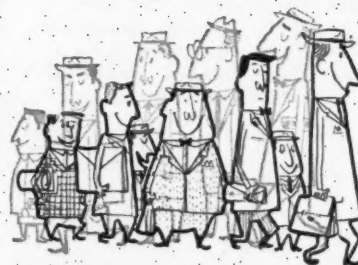
Mayo produces all types of Tunnel Forms—telescopic, non-telescopic, separate sidewall and arch, single unit, full round forms for monolithic pours, etc. Each is designed for the exact requirements of the job in any part of the world—be it tunnel, sewer or conduit.

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with new figures.

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# DRY EXCAVATION

AT THE OCEAN'S DOORSTEP THROUGH STANG DEWATERING

H. C. Smith, contractor, says:

**"STANG's expert engineering, instantaneous service  
and know-how KEPT OUR JOB DRY."**

"We've used Stang on many jobs, and the thing that always impresses us most is the speed of service. Saturdays, weekends, day or night, when we call them, they're here. Besides the service, we depend on their engineering. Because they're experts in handling water, they invariably save us time and money.

On this particular job, we encountered several unusual and difficult water handling problems but, thanks to Stang's engineering and know-how, we kept

out of any real trouble. In our book, Stang is tops."

For the most practical and economical answer to **your** water handling problems, call on water handling specialists... call STANG!

PICTURED ABOVE: The Scattergood Steam Plant, in Southern California, on the edge of the Pacific Ocean. The excavation, made in beach sand, measured approximately 300' x 100' at sub-grade, with a maximum cut in the deep section of 32' below the water table.

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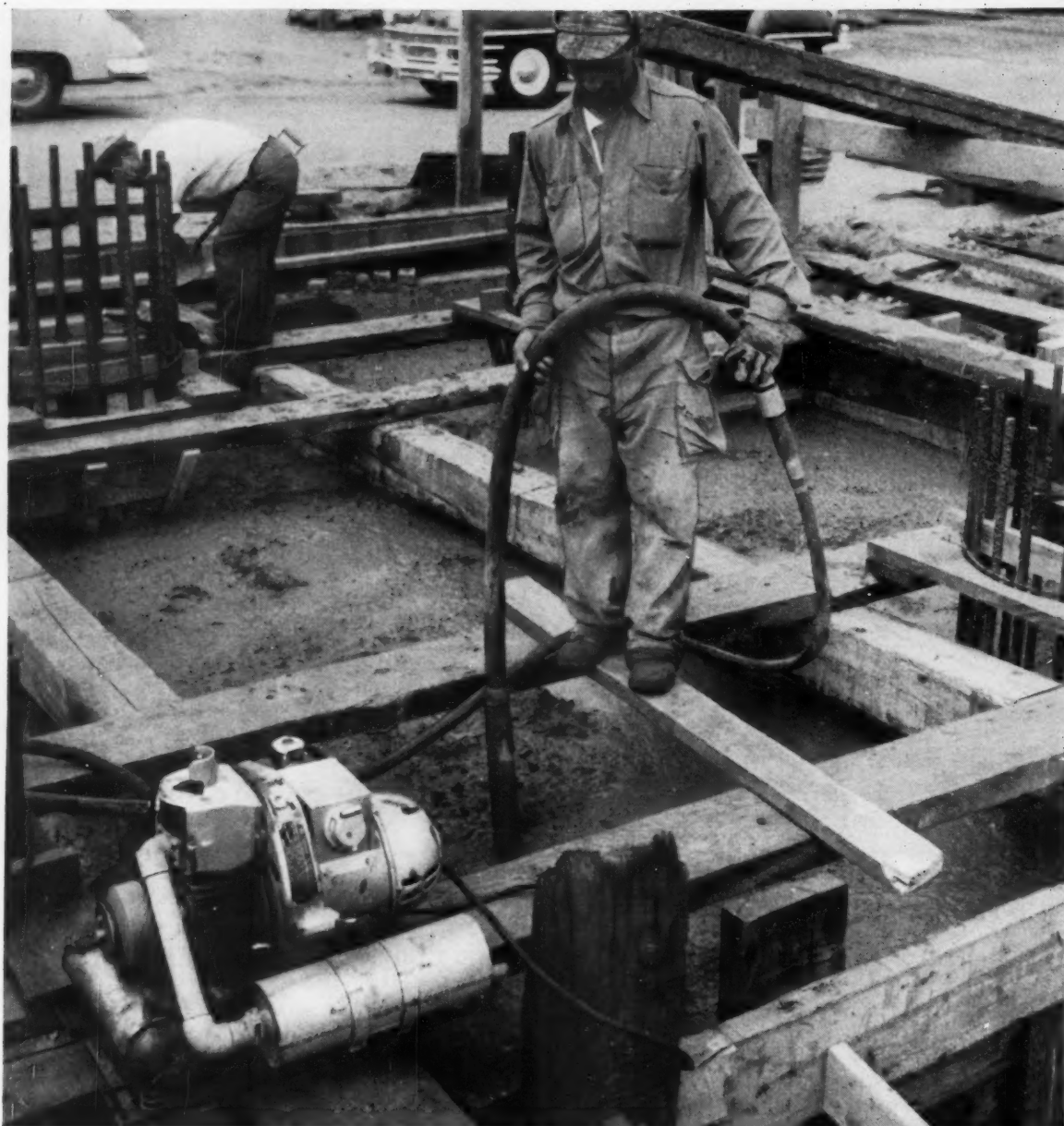
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## Less Labor, No Scaffolding Needed

Less labor, no special scaffolding mean less costs . . . something important to you. That's what you get when you use a Homelite Concrete Vibrator. You carry your power supply . . . a Homelite Generator . . . and set it up where you need it. You plug in the vibrator

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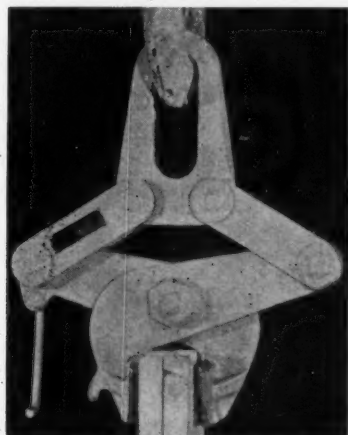


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**EQUIPMENT NEWS...**  
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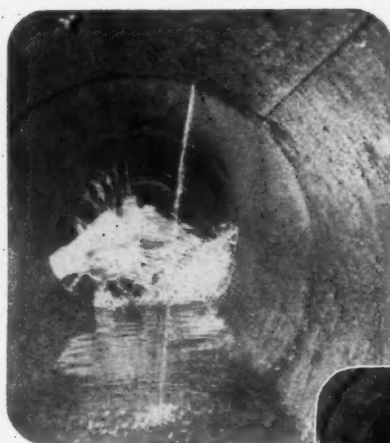
flanged tubing ends together and an even contact is formed around the entire tube circumference. No special gaskets or tools are required. Servicemaster V-band Tube Joints are available for tubing sizes ranging from 1½ to 4½ in. in dia.—Marman Div., Aeroquip Corp., Jackson, Mich.



**PULLS PILING**—Non-automatic tongs for pulling wood sheet piling and lagging have been developed by Heppenstall. Jaws of the tongs are shaped to provide a maximum of bearing surface against a pile. Each jaw has five teeth that bite into the wood transversely to the grain. A link at one side holds the jaws open when the tongs are lowered over a load. When the line is slackened, this link drops out and the jaws close on the piling and hold it firmly. The tongs have a pulling capacity of 10,000 lb. Normal jaw opening is 3 in.—**Materials Handling Div., Heppenstall Co., 5th Ave. and 16th St., New Brighton, Penn.**

**TRUCK COMPRESSOR**—A new 125-cfm rotary compressor, designed for cross-mounting in a truck body, has been developed by Davey. Called the model 125-RP Hydrovane, the new compressor features a compact, weather-proof control panel that is mounted on the curb end of the compressor. Located near clutch levers and air outlets, it permits one-man operation of the compressor. The model 125-RP is only 81 in. long, 34 in. wide, and 51 in. high. It weighs 2,300 lb. Power is supplied by a Hercules GO 198 engine.—**Davey Compressor Co., Kent, Ohio.**

# Costly waste, 20 gallons of water per minute



**BEFORE**

*Waterplug stops running water INSTANTLY!*



**AFTER**

*Here is what Underwater Services, Valley Station, Ky. had to say about Waterplug*

On October 6, 1957, our Underwater Services Company was called upon to repair a major break in an underwater drainage system for the Hardin County Sportsmen's Lake at Elizabethtown, Kentucky. Upon diving to the bottom of the lake we discovered several large ruptures in the 24" tiles used in the drainage system. Water, uncontrolled, was pouring through these breaks at a minimum approximate rate of 20 gallons per minute. Using underwater diving equipment we managed to reduce this torrent by packing sandbags into the holes channeled through the four feet of earth covering these tiles. Descending through a water control tower, we gained access to the interior of the drainage tiles to the area of break-through. Above us were four feet of lake bottom and 20 feet of water above that. Under these extremely adverse conditions we used the Thoro System WATERPLUG Cement to repair the breaks from the interior of the tiles. Because of the simplicity and ease of mixing and applying WATERPLUG Cement, we were able to completely and effectively repair these breaks in the drainage system. We were delighted with the effectiveness of WATERPLUG Cement in successfully overcoming this difficult water repair problem. Feel confident that in future underwater repair problems, our company will rely upon WATERPLUG Cement.

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NEW EAGLE, PENNA.      CENTERVILLE, IND.



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\*\$14,700 F.O.B. Elkhart is price of portable model illustrated. Stationary model, \$13,900 F.O.B. Complete, ready to operate. Prices subject to change without notice.



Make your own hot mix asphalt with this new WHITE plant and save up to \$2.30 a ton. At its capacity of 160 tons an 8-hour day, that's a savings of \$368.00 a day. Thirty-eight of those days pays for the L-20!

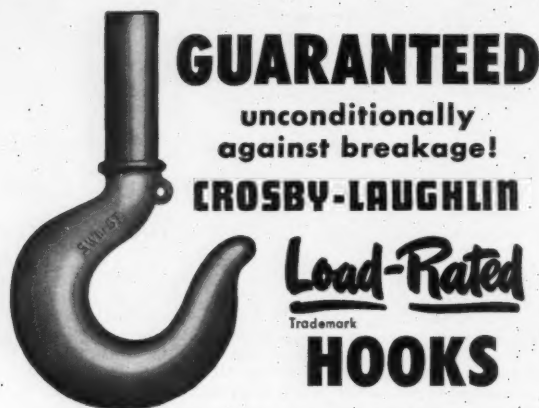
Produce any type mix you can get from a \$100,000 plant: hot, RC, MC, SC and emulsified for top

course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 325 degrees.

The L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance.

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**White Manufacturing Company, Elkhart 6, Indiana**



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unconditionally  
against breakage!  
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Greater safe working loads—the highest guaranteed capacity per size—are offered by Crosby-Laughlin\* "Load-Rated" Hooks. Proved design and new alloys—drop forged and heat treated—increase capacities by 50% with no increase in weight! This complete line gives you capacities from  $\frac{3}{4}$  to 150 tons—is unconditionally guaranteed against breakage. Every "Load-Rated" hook with drilled cam converts quickly to a safety hook. Demand the "RED fittings," symbol of quality and the world's most complete line of drop forged fittings. New catalog has detailed specifications on over 2000 items. Available from construction, industrial and mill supply distributors. Or write:

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## New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

**LOADER**—A new 4-wheel drive, rear-wheel power-steer tractor loader, called the W-9 Terra-load'r is described in Case Bulletin CTS-111. The 12-p catalog shows interchangeable buckets from  $1\frac{1}{4}$  to  $2\frac{3}{4}$  cu yd and gives complete specifications and job applications for the machine.—**J. I. Case Co., Racine, Wis.**

**DRAINAGE DATA** — "Solving Drainage Problems" is a 76-p booklet published by Bethlehem Steel Co. that contains a great deal of information about installing corrugated culvert pipe. Included are charts and tables useful in culvert design as well as descriptions of various construction methods, such as jacking. This is an excellent booklet on the subject. — **Publications Dept., Bethlehem Steel Co., Bethlehem, Pa.**

**ELECTRODE SELECTION** — A new 12-p "Weldirectory of Manual Electrodes" describes how to select the most efficient electrode for a given welding job. The booklet gives detailed descriptions of the various types of Lincoln electrodes and the back page is a wall chart giving frequently used information about these electrodes. — **The Lincoln Electric Co., Cleveland 17, Ohio.**

**DREDGES**—A 12-p booklet describes six basic types of dredges—the grapple, dipper, bucket, plain suction, self-propelled hopper, and cutterhead pipeline types. Also included are typical applications and special equipment. — **Bulletin 935, Ellicott Machine Corp., Baltimore, Md.**

**GRADER BLADE CONTROL** — A 6-p folder describes an automatic blade control system for Caterpillar motor graders. The Preco control automatically holds the grader blade at the exact slope required regardless of the position of the grader or the unevenness of the terrain. The device is faster than hand and eye

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ON A  
SPOT



an ordinary tire "blew" the job

but  
JACK'S  
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At all kinds of construction projects, all around the nation, contractors have *proved* that using U. S. Royals prevents costly tire delays, keeps jobs on schedule!

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up by expert on-the-spot *service* and complete, convenient *retread facilities*.

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— 35% greater traction

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— 52% stronger body

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## NEW PUBLICATIONS...

continued

and can sense and correct surface irregularities to  $\frac{1}{8}$  in. in 10 ft.—**Preco Inc., 6300 E. Slauson Ave., Los Angeles 22, Calif.**

**REBUILDING TRUCKS**—International Harvester Co. manufactures a "rebuild kit" that enables a truck owner to replace or modernize the front end of any make or model of heavy-duty truck. The kit includes cab, frame, front axle, front brakes, fuel tank, electrical system, steering system and paint. A 4-p folder describes the kit.—**Form CR-376-G, Consumer Relations Department, International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.**

**WELDING CATALOGS**—Hobart equipment is featured in three new folders by the company. DM-73 describes automatic and semi-automatic equipment for submerged arc and inert-gas-shielded arc welding. DM-71 describes a combination AC, DC, and inert-gas welding machine. DM-74 describes a 400-cycle induction heating generator and tells how it simplifies the preheating and stress relieving of arc welded joints.—**Hobart Brothers Co., Troy, Ohio.**

**ROTARY DRILLS**—Catalog E-270 includes the complete line of Davey portable rotary drilling equipment. The line includes an air blast unit, a mud fluid rig and four combination air compressor-mud pump machines. Five drills are truck-mounted and one is designed for crawler tractor mounting.—**Davey Compressor Co., Kent, Ohio.**

**SCRAPER COSTS**—A 12-p booklet by Caterpillar contains job reports showing production and cost figures for DW15-No. 428 Tractor-Scrapers. The booklet is entitled "Moments of Decision."—**Form D829, Caterpillar Tractor Co., Peoria, Ill.**

**CONSTRUCTION SURVEY**—"Major Latin American Construction Projects" is a 118-p report prepared by McGraw-Hill on construction activity in Central and South America. The report lists by country and by type of job all construction projects costing more than \$1 million. Each



3,000 watts

## New Onan all-purpose Diesel plant cuts electric power costs in half!

Lower fuel cost, less maintenance, and longer life cut power generation costs with the Onan 3DSL to half that of small gasoline-powered electric plants. For applications requiring an almost continuous supply of electric power, this new plant gives dependable service season after season.

**Lighter weight and Vacu-Flo cooling**  
The new 3DSL is powered by an Onan single-cylinder, air-cooled full-Diesel engine. Available in all standard A.C. voltages and also as a 32-volt battery charger. Vacu-Flo cooling, permitting enclosed installations, is standard. It has a new mounted muffler, more efficient dry-type air filter, new geared crank, and it's hooded for protection on the job. Smoother-running, lighter weight, and compact.

New low price makes it an even bigger value... allows you to "go Diesel" for more of your power generation needs. For jobs requiring more capacity ask your distributor about the Onan 5DRP, two-cylinder, air-cooled, 5,000-watt Diesel.

Onan gasoline-powered plants: Air-cooled — 500 to 10,000 watts A.C. Water-cooled — 10 to 150 KW.

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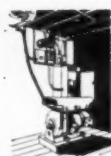
#### Take it anywhere

Weighs only 470 pounds. Haul it to the job in pick-up truck or on Onan's high speed, fully-enclosed trailer.



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New steel turret hood protects plant against weather and abuse on the job. All-climate insulated generator.



#### Install it anywhere

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**ANOTHER BENEFIT OF MSA'S  
NEW HAT SUSPENSION**

## AIR CUSHION SWEATBAND



MSA's new double cradle suspension for Skullgard Hats and Caps gives you "Fixed-Crown" clearance and adjustable comfort.

**Item:** Consider the *sweatband* of the new M-S-A hat suspension. It also contains a very important wearer benefit. The sweatband is designed with a rolled edge which provides an air cushion effect for greater comfort. Tab at end of sweatband keeps it smooth and free of bulges.

Other features include: handy locked-in suspension; no pressure points; fast size adjustment; easy-to-clean, long-wearing plastic webbing.

Write for new bulletin for details.



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### NEW PUBLICATIONS...

*continued*

listing contains the name and location of the project, dollar value, dates of commencement and completion, sponsoring agency, name of contractor and current status of job. Price \$2.—**Business Manager, Ingenieria Internacional Construccion, McGraw-Hill International Corp., 330 West 42nd St., New York 36, N. Y.**

**CHAIN HOISTS**—A 4-p folder describes Thor's new chain lift air hoists. These rigs weigh 30 lb and have a lifting capacity of 1,000 lb. They use either roller chains or link chains and can be set up with either pull cord or pendant control. — **Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill.**

**DOUGLAS FIR**—The 1958 edition of the Douglas Fir Use Book is now available. About half its 300 pages are devoted to text and illustration on timber design. The remaining pages contain tabular data on these subjects. The book is primarily intended for designers but may be useful to contractors and builders also. Price \$5.—**West Coast Lumbermen's Association, Portland 5, Ore.**

**PORTABLE RADIOS** — General Electric's bulletin ECR 566A describes the company's new portable two-way radio with completely transistorized receiver. The bulletin covers sensitivity, receiver design, audibility, standby drain and field servicing. —**General Electric Communication Products Department, Syracuse, N. Y.**

**LOADER SPECIFICATIONS** — Four new specification sheets cover the following four Trojan tractor shovels: Model LHM-75, 1-yd capacity; Model 104, 1½-yd capacity; Model 154, 2-yd capacity; Model 404, 4-yd capacity. **The Yale & Towne Mfg. Co., Contractors Machinery Division, Batavia, N. Y.**

**RETAINING WALLS** — Catalog RW-3558 describes metal bintype retaining walls by Armco. The booklet includes installation rules, technical data and typical applications. —**Product Information Service, Armco Drainage & Metal Products, Inc., Middletown, Ohio.**

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*because  
it gives  
you*

## TOP RESISTANCE TO SEVEREST ABRASION

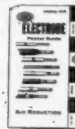
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\* Tungstube is outstanding for use in hardfacing grinding wheels, drill bits, metal working machinery...

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Our growing population demands constantly increasing mobility. Result: thousands of new opportunities, new jobs in the coming Jet Age.



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Nuclear energy is now supplying power for ships and electric plants. Future possibilities are virtually unlimited.



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As our nation grows, the demands made upon communications grow proportionately. Thousands more needs, more jobs.



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The trend is to labor-saving, ready-to-eat packaged foods. This new phase of an old industry will need thousands more workers.



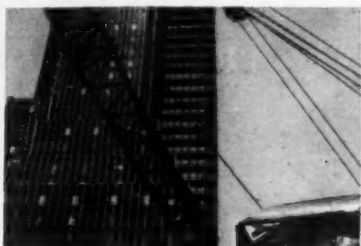
## HEALTH

Ever-increasing opportunities in research, development and production. In the field of antibiotics 50% more workers will be required.



## EDUCATION

The giant school-building program now beginning will offer new jobs to many thousands of construction workers.



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3 million workers will benefit from new highway and construction programs—and even more workers will be needed soon.

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**1. MORE PEOPLE**—Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.

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**3. MORE INCOME**—Family income after taxes is at an all-time high of \$5300—is expected to pass \$7000 by 1975.

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**6. MORE RESEARCH**—\$10 billion spent each year will pay off in more jobs, better living, whole new industries.

**7. MORE NEEDS**—In the next few years we will need more than \$500 billion worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

**Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act now to get ready for it.**

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## THE BARCO RAMMER

Put Barco Rammers on the job and watch the results. One of the biggest advantages they offer is ability to handle work in minimum time.

**HIGH DEGREE COMPACTION**—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—**EASILY! EFFICIENTLY! ECONOMICALLY!**

**FOR TOUGH JOBS**—The Barco Rammer is especially useful for compacting fill in restricted areas close to walls, culverts, and abutments—in trenches, ditches. **ONLY** the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

**ONE MAN OPERATION**—On area tamping, one man can average 20 to 30 cubic yards of fill per hour.

On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.



Ask for Catalog 621



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The new Barco VIBRA-TAMP is a proven tool—superior in design and performance—backed by leading equipment distributors representing Barco in all parts of the country.

**VERSATILE PERFORMANCE**—For vibratory compaction of granular base materials and tamping bituminous surfacing.

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Ask for Catalog 630

112J Hough St., Barrington, Ill.

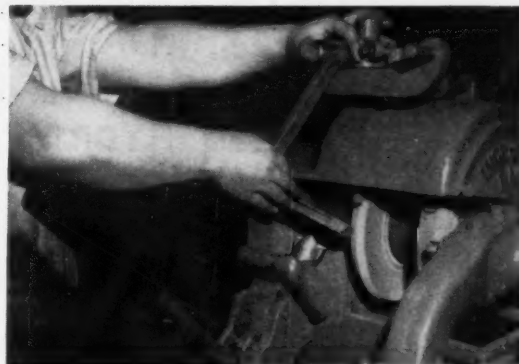
BARCO VIBRA-TAMP

for Granular Fill and Bituminous Surfacing

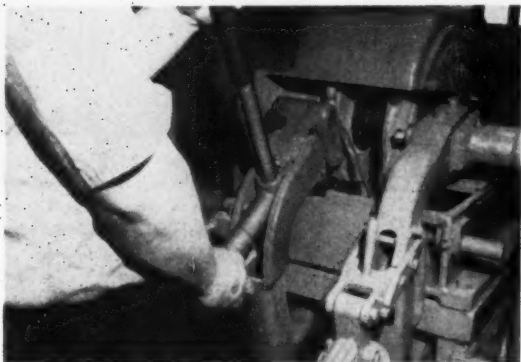
# The Maintenance Shop...

## How to Regrind Bits With Carbide Inserts

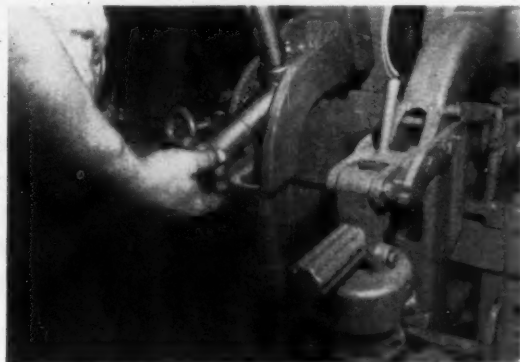
Nothing will help you to get in a round quicker than fast-drilling bits with tungsten carbide inserts. Proper and periodic regrinding keeps these bits at peak efficiency and cuts down on unnecessary wear and tear on drill steels and other equipment. Follow these step-by-step recommendations from Ingersoll-Rand Co., manufacturers of Car-set bits, to get a fast, accurate regrinding job.



**KEEP WHEEL DRESSED PROPERLY**—When the correct cutting angle is maintained, the grinder does a quicker job without wasting the carbide insert. Ingersoll-Rand recommends that the cutting angle be 100 deg. Use manufacturer's recommended wheel size.



**USE LIGHT, INTERMITTENT PRESSURE**—When bringing the bit to the grinder, heavy pressure wastes the wheel and damages the bit. Keep a steady flow of water on the bit to dissipate heat that might build up and crack carbide inserts.



**OSCILLATE THE BIT WHILE GRINDING IT**—Rotating the bit back and forth through a small arc improves the grinding action and keeps heat from building up. Maintain the correct bit angle by adjusting the forming head angle from time to time.



**CHECK THE CUTTING EDGE ANGLE**—Use manufacturer's gage. When the angle is right, flatten the edge  $1/32$  in. with the side of the cutting wheel. Over-sharpened cutting edges that aren't flattened chip quickly and wear out prematurely in the hole.



**GRIND DOWN OVERHANG**—Protruding inserts on bit above are likely to crack off in the hole. When the wings wear away from the inserts, grind the gage surfaces of the inserts down until they match the steel.

Continued on next page



# TURN OVERHEAD INTO PROFIT

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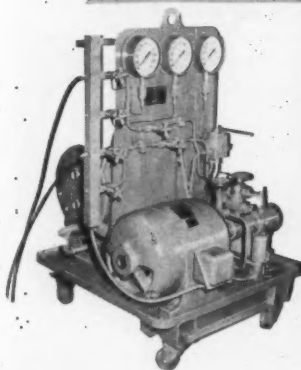
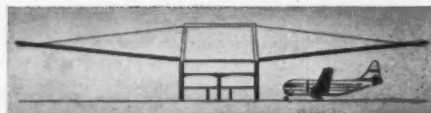
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- Standard unit will load tractors weighing in excess of 6 tons. Heavy-Duty units load 8 tons or more.

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## MAINTENANCE SHOP ... continued



**CLEAR CENTER HOLE**—Chips from grinding sometimes clog the center hole. When the hole is closed, reopen it with a small drill. Hold the bit in the vise and drill it clean from the inside out.



**LOOKS LIKE NEW**—A properly reground bit looks like a new one. This Ingersoll-Rand Carset bit is ready for work. Cutting edges are flattened, steel and carbide surfaces match, and center hole is clear.



30,000 feet of curb and gutter are being erected by Neel Contracting along a 4-lane federal highway near Atlanta, Georgia. Neel used 1,000 feet of Blaw-Knox Steel Form set-up on the 8 3/4 mile job.

## **"I have never seen a form that could take as much punishment"**

"We have been using Blaw-Knox forms for ten years, and 80% of our original order is still in use," says Charles Neel, owner of the Neel Contracting Company, Atlanta, Georgia.

Prominent in curb and gutter construction for 25 years, Mr. Neel is convinced that, "Blaw-Knox Universal Steel forms provide the most economical means of curb and gutter forming.

"Our ten-man crew lays from 400 to 550 feet of curb and gutter per eight hour day. Over a period of ten years the 80% re-use factor represents an

economy that can't be counted in dollars and cents," he adds.

Curb and gutter specialists like Neel have relied on Blaw-Knox Universal Forms for economy, efficiency and quality. Their rugged construction, and high re-use factor have earned them preferred status. Blaw-Knox Universal forms are available for every type of curb, curb and gutter, integral curb or side-walk job. Your Blaw-Knox distributor can help you pick just the right form from straightways to the most complicated layouts.



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# Methods Memo...



## Plastic Pavement

Autos roll over a test section of the San Francisco-Oakland Bay Bridge that is surfaced with a new plastic adhesive called Guardcote.

Shell Chemical Corp., developer of the new surfacing material, say it resists skidding even when it is wet and stops cars in one-half to three-quarters of the distance required on concrete.

It's simple to put down. It can be sprayed on a concrete or asphalt surface with a bituminous distributor. Then it is covered with a fine coating of grit as it begins to harden. It sets in from two to four hours.

Shell has 15 test strips of Guardcote on highways and bridges in various sections of the country, including the New Jersey Turnpike, the Triboro Bridge in New York City, the Wilbur Cross Parkway in Connecticut, and Telegraph Road, Detroit.

## Safety Tool

There's a new book out that every contractor should have. It's the Manual of Accident Prevention in Construction, published by the Associated General Contractors.

AGC's Safety Manual is a "best seller." The first edition was published in 1927; the latest edition is the fifth revision.

The new edition is in loose-leaf form to permit frequent additions and substitutions. The sections on Explosives, Highway Construction, Concrete Construction, Scaffolding, Power Tools, and Marine Equipment are enlarged and updated, and there's a new section on Powder-Actuated Tools.

Experts in each type of construction contributed their recommendations to the AGC Accident Prevention Department which compiled and edited the manual. You can get it for \$3.25 by writing to The Associated General Contractors of America, Inc., 20th & E Streets NW, Washington 6, D.C.

## Atkinson Expands

One of the biggest U.S. construction companies, the Guy F. Atkinson Co. of San Francisco, has just grown still bigger. Atkinson has taken over the United Construction Co. of Winona, Minn.

United was formed in 1933 and has played a major role in the canalization of the upper Mississippi River. During World War II, United built a large marine terminal at Mobile, Ala., and a big drydock and two piers at the South Boston Navy Yard.

Its most recent work has been a joint venture with the Guy F. Atkinson Co. for construction of Greenup Lock on the Ohio River.

J. A. Henderson, founder and president of United, has been named a vice president of the Atkinson Company. Other principal United officers also will associate with Atkinson.

## Lunch on the Job

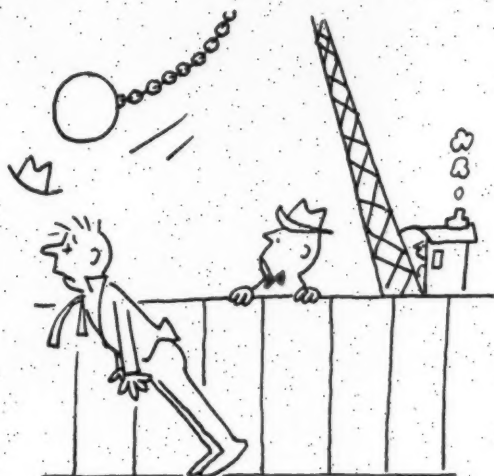
Workers on the Time & Life Building in New York City get good food and fast service at a mobile canteen right on the job.

Before work began on the 48-story building in Rockefeller Center the general contractors arranged with a catering service to supply food and coffee for men on the job. The catering service bought a trailer, outfitted it, and staffed it with three men who keep it open for business eight hours a day.

There is an open plaza in front of the building so it is possible to leave the trailer on the site where it is handy for workers and still does not interfere with construction operations.

General contractors for the \$70-million building are John Lowry, Inc., and George A. Fuller Co. of New York.





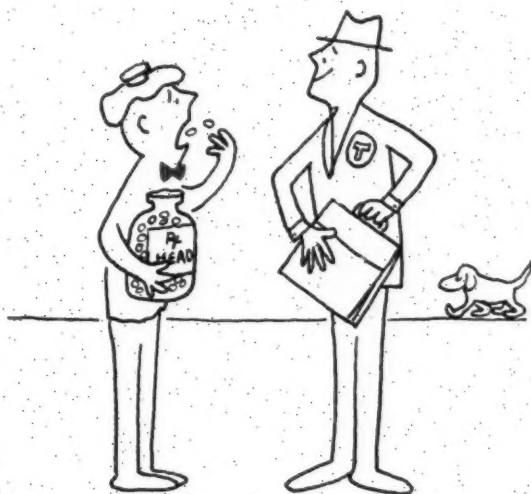
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"My biggest contract!" Gary Andrews chortled. "What a plum!"  
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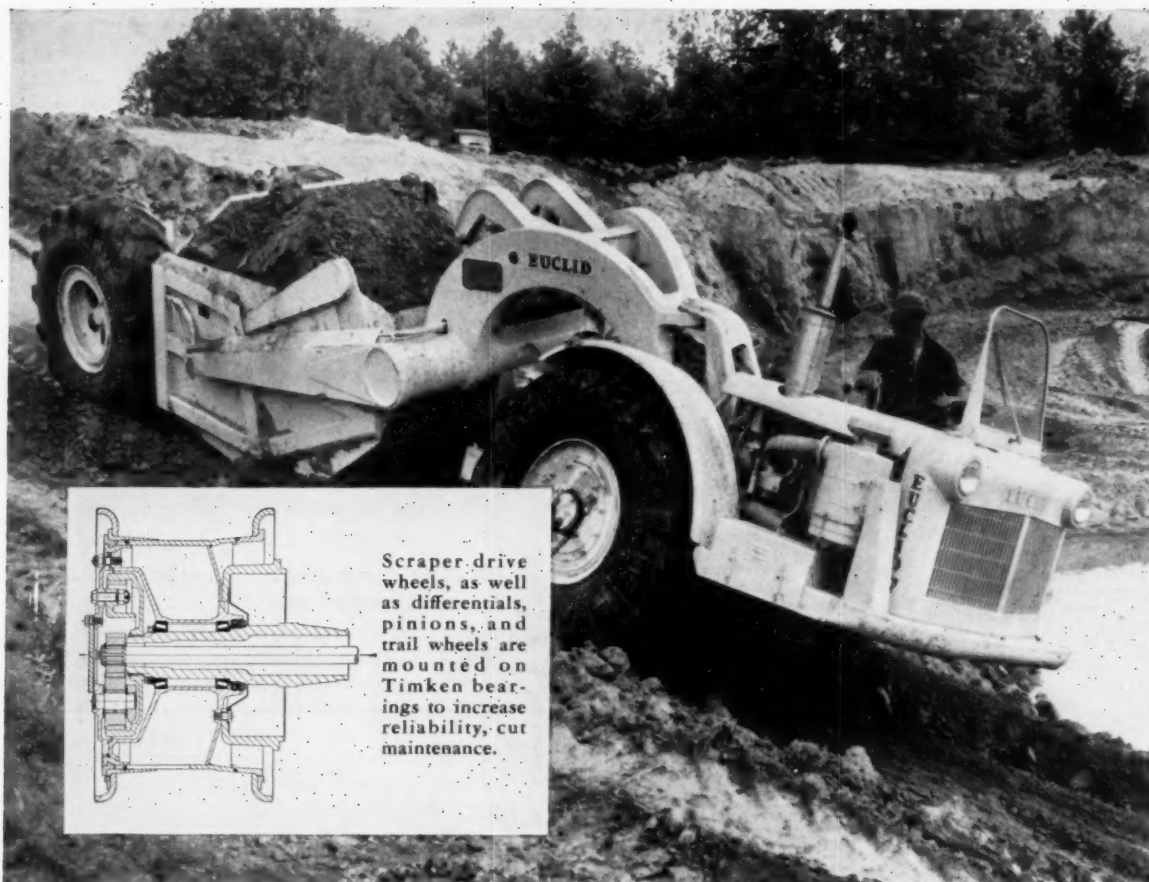
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Timken bearings are first choice with makers of earth moving equipment because they supply the dependability that keeps machines on the go. Their tapered construction permits them to take radial and thrust loads or any combination. They practically eliminate friction, making heavy loads easier to move. Timken bearings are geometrically designed

to give true rolling motion—precision-manufactured to live up to their design.

Timken bearings keep shafts and housings concentric to maintain positive closures. Dirt stays out, lubricant stays in to insure longer life, keep breakdowns to a minimum. Case-carburizing of Timken bearings gives them hard, wear-resistant surfaces over tough, shock-resistant cores. That's one big reason Timken bearings normally last the life of the machine.

We even make our own steel to make sure it's the best. No other American bearing manufacturer does. Make sure you get all these advantages in the machines you build or buy. Always specify Timken tapered

roller bearings. Look for the trademark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



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